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A TREATISE

ON THE

FOOT OF THE HORSE,

AND A

NEW SYSTEM OF SHOEING,

BY ONE-SIDED-NAILING;

AND ON THE

NATURE, ORIGIN, AND SYMPTOMS,

OF THE

NAVICULAR JOINT LAMENESS,

WITH

PREVENTIVE AND CURATIVE TREATMENT.

BY

JAMES TURNER,

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ADVERTISEMENT.

My views regarding the precise seat of the disease in chronic lameness of the Foot of the Horse, have been, for several years, before the public; and veterinary practitioners have since discarded the old and erroneous term of Coffin Lameness, and adopted that which is truly descriptive of this formidable malady, viz. The Navicular Joint Disease. I am now induced to collect the papers on this subject, which are dispersed through various numbers of THE VETERINARIAN, *together with my other papers in that Periodical, illustrative of the* System of Unfettered Shoeing; *which system secures the ordinary defence to the foot, without confining the elastic hoof in its alternate expansion and contraction, and affords facilities to the growth and full development of the organ, notwithstanding a continued application of shoes to the two-years-old, or even yearling colts.*

It is my present purpose to collect them together, with additional important facts, in order that they may appear in a more convenient form, and serve as a Text-Book *to a more enlarged work on the* Structure, Functions, Diseases, and Treatment of the Horse's Foot ; *which, I shall venture, at no very distant period, to lay before the public, accompanied with coloured plates descriptive of the healthy and morbid condition of this important and very complex organ.*

I hope to demonstrate, that we may continue to have iron rivetted to the horse's foot, and yet preserve the necessary capacity of the horny box throughout the animal's life-time, together with the natural and expanded appearance of the external hoof.

The confidence which I have gained since my papers were first published, the result of extensive practice and unwearied observation, has so confirmed me in the soundness of the several doctrines which I have therein laid down, that I do not hesitate to pledge myself to my professional brethren, that those data will form the groundwork of my future labours in this intricate and interesting pursuit.

Having considered that the papers on the Navicular Disease, as they appeared in THE VETERINARIAN, *would be rendered clearer by the adoption of a more systematic arrangement of the matters contained in them, I have altered the distribution of certain passages, and also availed myself of the opportunity to add some few practical facts, which I have since observed.*

JAMES TURNER.

Horse Infirmary, 311, Regent Street, Portland Place,
June, 1832.

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ON THE

NAVICULAR DISEASE.

FIRST PAPER;

Veterinarian, Vol. II, p. 53.

THE NAVICULAR DISEASE, OR CHRONIC LAMENESS IN THE FORE FEET OF HORSES.

[Read at the Veterinary Medical Society, Dec. 24, 1828.]

Gentlemen,

I beg leave to remark, that the paper which I am about to read, prior to that which is the subject of this evening's discussion, is the copy of a manuscript which I had the honour of addressing to Professor Coleman, and likewise to the Assistant Professor Sewell, of the Royal Veterinary College, as far back as the year 1816, on the subject of Groggy Lameness in Horses, with the view of inviting their attention to a very frequent cause of foot lameness, which had never been adverted to by Professor Coleman in his lectures.

Manuscript transmitted to the Veterinary College in 1816.

I wish it, however, to be understood, that the original paper contains only a brief sketch of the impression which the first sight of the disease had

made on my mind; and although twelve years' experience in active practice since that period have induced me to draw some other inferences, which may not exactly accord with the first impressions, yet they will be seen to harmonize in the aggregate*.

Navicular joint disease unknown as the general seat of chronic lameness of the fore feet.

I believe I am correct in stating, that before the year 1816, the College Museum, splendid as it then was, contained but a solitary specimen of the navicular disease, and which was simply a diseased navicular bone, divested of its ligaments and tendon; but Mr. Coleman has, on several occasions since, candidly acknowledged in his lectures, that he had looked upon it previously to that time as a specimen of disease of a very rare occurrence. I shall, however, attempt to shew that it is a very prevalent disease, and that it is the *general cause of the groggy foot lameness* instead of the *occasional, chance, false-step* disease, which some of the very old writers on farriery are said to have described nearly a century ago. That they took only a superficial view of this truly formidable complaint, and altogether omitted to connect it with the general foot lameness, I think is quite manifest; or surely I should not have it in my power to say, that not an

* The important paper to which Mr. Turner here alludes, and which, in our opinion, fully establishes his claim as the first person who brought this disease fairly under the notice of the profession, we are reluctantly compelled, by the press of other matter, to omit. It shall be inserted at an early opportunity.—*Editors of The Veterinarian.*

author had reverted to it, from the very foundation of the Veterinary College, down to the period at which my paper on the subject was sent to that institution; and in which interval of time, Professor Coleman and Mr. Bracy Clark had immortalized themselves by their luminous works on the foot of the horse.

Contraction.

In attempting to elucidate the nature of the navicular disease, together with its causes, I find it necessary to class contraction of the hoof under two heads: the one I would designate as general contraction; the other I must presume to call *occult* or partial contraction. By the former, I mean a foot with narrow heels, its figure presenting rather more an oblong than a circular shape, with a general diminution of its size and capacity.

Two forms of.

The general or apparent.

By the latter, occult or partial contraction, I advert to that treacherous kind of foot frequently to be met with, which upon merely inspecting in the stable, without viewing the action of the animal, we might (without any disparagement to our judgment) be induced to pronounce a good fair average foot; and yet upon trotting the horse ten yards, although possessed of sound, clean legs, he might prove himself a decided cripple, groggy, and incurably lame.

The occult or partial.

Insidious nature of this disease.

My own experience in the treatment of chronic foot lameness, since the year 1816, has afforded me opportunities of watching the causes, symptoms,

and progress of the navicular disease under all circumstances, over a hunting country, notorious for the destruction of horses by its hills and flints, viz., Surrey. I have also seen the ravages of the disease during my practice in the army, and I know practically the proportion of wear and tear arising from it in post and coach establishments. Close observation and repeated dissections have thoroughly convinced me, that the navicular joint is more or less diseased in every case of chronic foot lameness, where no apparent cause exists for such lameness, except contraction. And as a large proportion of these cases of lameness exhibit contraction of the hoof or external foot, in a much less degree than hundreds of horses daily doing fast work on the hard road and in the field, notoriously sound, or at least free from lameness (many of whose feet might be selected as choice specimens of contraction), it occurs to me that this classification or division of contraction into two kinds is necessarily called for. To detect the existence of this insidious disease during life in its incipient state, the *united* tact, talent, and discrimination of the experienced practitioner are *essential;* for there are many apparently fine, open-looking feet affected with this complaint, which in reality are treacherous feet, concealing from the eye of a common observer a lurking evil, which is generally antecedent to the navicular disease: this is the occult partial contraction or pressure, the precise seat of which I shall presently point out.

Occult partial contraction a precursor to navicular disease.

In the course of this investigation I shall attempt to answer a question which has been considered by horse amateurs a great mystery; a question which has been proposed by every horseman, but never yet satisfactorily answered by any man: it is this—How do you account for so many horses, with their feet much contracted, being perfectly free from lameness in the midst of hard work?

I propose, first, to shew what I conceive to be the primary and chief causes of contraction; and, secondly, shall attempt to account for these instances of contraction, as being unaccompanied with lameness.

Notwithstanding the conflicting opinions of our eminent veterinary writers as to the causes of contraction, all seem to admit, that contraction of the hoof is more or less apparent in most horses which have been accustomed to be shod; that it often happens long before they have attained their highest value for work, and not unfrequently before they are five years old. On taking up the foot of an aged horse, we rather look for it as a necessary attendant; but yet it cannot be denied, that a large proportion of these horses are perfectly free from lameness in the heart of labour.

An exuberant growth of toe a primary cause of contraction.

In contrasting the feet of our working horses (as enduring a state of bondage) with those left to nature, I am convinced that the lengthened toe, so often the accumulation of from four to six weeks' growth of hoof, is a very serious evil, and as great a

violation of Nature's law as the common shoe or inflexible ring of iron affixed to the foot with nails, which, according to Mr. Bracy Clark, is the only bane. I am led to this conclusion from observing that the unshod foot in a state of nature is never subjected to this restraint, as the daily wear keeps pace with the growth, and the heels widen in proportion as the toe is shortened, and *vice versâ*.

2dly, The next deviation from nature, and which I conceive to be the harbinger of the evil, is the *passive* state to which the feet of horses are subjected by the usual mode of tying the animals to a post in a stall, which, even in a well-regulated stable, is frequently from twenty-one to twenty-three hours out of the twenty-four. This, however, is not the worst, as it is by no means unusual for a horse to stand in his stall two or three days together, when not required to work.

Deprivation of motion to the foot in the stable.

If we calculate these vacant hours, and compare them with the very few that a horse in pasture is in a quiescent state (he being always in quest of the best herbage), we need not be surprised at finding, by the end of a year, that certain important parts of the horny box have changed their position and character, from the deprivation of this natural pressure and motion conjointly. The particulars of this I shall presently explain; and I firmly believe, that, if every valuable horse in this kingdom were to be forthwith turned loose into a large box night and

Stationary position in the stall, a most prolific source of contraction.

day, besides the continuance at his ordinary work, it would prove the worst event for veterinary surgeons that has ever yet happened in the horse world; because it would tend more to cut off our supply of groggy lameness, and its attendants, than any circumstance, or single cause, that has ever yet been published, or even named.

3dly, The absence of frog pressure is another cause. The frog is doubtless an important organ in preserving the natural form of the hoof; but I differ from those eminent veterinary authors who have urged, in opposition to our distinguished President, Professor Coleman, that the frog cannot bear pressure, my experience having shewn me that it can; and I have convinced myself, by repeated experiments, that it can endure an extraordinary degree of *protected* pressure without injury to itself or other parts of the foot. I use the words protected or *secondary* pressure as a distinguishing mark from the frog pressure, which has been so long insisted on by Professor Coleman; and, if I mistake not, this gentleman inculcates the necessity of the foot being shod with the frog exposed, at least, on a level with the heels of the shoe.

Frog pressure considered.

Experience has convinced me, as well as Mr. Coleman, that frog pressure is both natural and beneficial; but I must admit, with many other practitioners, that, in the present improved state of our roads, the sensitive foot cannot sustain the shock

arising from the frog receiving the repetition of violence from the hard ground in an equal proportion with the heels of the shoe. I therefore advise that the frog be brought as near to the ground as possible, except by so much of the heels of the shoe as may be necessary to break the force of concussion, and yet allow the frog to receive some part of the pressure, in a secondary manner, before the foot quits the ground.

One of the uses of the fatty frog—defends the synovial or lining membrane of the tendon.

I believe, however, I am now at issue with the Professor, when I state my conviction that one of its uses is to serve as a cushion or elastic bed for the navicular joint to rest upon, not merely for the purpose of protecting the insensible flexor tendon, as Mr. Freeman states, but especially for the protection of the fine delicate synovial membrane lining the navicular joint, a web as exquisitely sensible, when inflamed, as the outer coat or conjunctiva of the human eye.

There is another important function that the frog is intended by nature to perform, which, in the hands of art, it is seldom allowed to do,—which is, to act as an elastic prop of support when the animal is in action as well as stationary. It had its bold prominent figure for the purpose of affording a larger basis to receive the weight, as by increasing the ground surface of the foot it relieves the flexor tendon of a part of the burthen. Every unshod colt's foot (foals excepted), free from thrush, clearly evinces

this. When all parts of the foot are in their natural state, this organ is pressed upon from above fearlessly, including all that anterior portion of it which is influenced by the navicular bone; whilst its posterior part, by touching the ground, ascends at the same instant, and acts as a spring, which not only gives the animal confidence in his action, but, when standing still, emboldens him to convey a due proportion of his weight on his navicular bones, and to stand on his heels instead of his toes. This is the real characteristic of a valuable horse; viz., standing firmly on his flexor muscles, thus giving the fore leg, particularly the back sinew, that fibrous, tense appearance which is the attraction to the purchaser. The dealers in these valuable animals seldom omit to take advantage of such circumstances, and this indeed they are entitled to do, for, all other points concurring, a horse possessing such qualifications is invaluable.

Position in standing.

The superincumbent weight boldly conveyed to the flexor muscles, characteristic of a good leg.

I need scarcely remark how the reverse of this position must favour contraction.

When the toe is allowed to grow long, the heels high, and the frog elevated, the softest part of the fatty frog becomes absorbed; the horny frog no longer meets with its natural opponent, the ground; and, consequently, other important parts lose their counter-pressure and support. This is clearly seen when a horse is first observed to be getting wrong in his feet, and often before either lameness ensues,

Pointing of the feet—the weight conveyed or directed chiefly on the extensors—indicative of approaching disease.

or that marked symptom of the disease, *pointing* of the feet. If such a horse be carefully watched in his stall, without being disturbed, he will be found inclining his weight as much as possible on his extensor tendons, and thereby relaxing the limb.

Allowing the hoof to become hard, dry, and inelastic, particularly the sole and frog, from the want of stoppings or emollients, a serious evil ensues; but I think the degree of evaporation of the moisture of the hoof, arising from the heat of litter, has been much over-rated by Mr. Coleman and others; and I coincide with Mr. Percivall, sen., that the clean straw beds usually given at the present day are perfectly harmless, rather suspecting, that the evaporation is occasioned by heat generated within the foot than applied from without.

Importance of moisture to the hoof.

With regard to shoeing, as one of the causes, I believe all writers, ancient and modern (except the renowned Nimrod), are agreed by having designated it "a necessary evil." An evil undoubtedly it is of great magnitude, but it is also an inestimable benefit; as, without this art, horses would be comparatively useless in proportion to the excellence of our roads.

Shoeing, a benefit and a bane

The first pernicious consequence of contraction I have invariably observed to be a very gradual *displacement of the navicular and coffin bones*: they ascend within the hoof; but more particularly the navicular bone and heels of the coffin bone. This

deviation from the natural position is not only observable on dissection, but is quite as apparent in the living foot, by paring down to the quick those commissures or channels between the bars and frog which will be found so morbidly deep, and take so much time for the knife to reach the quick, that a by-stander, ignorant of the nature of it, would be induced to remark that such a horse was devoid of blood in his foot. Exactly in proportion to this morbid concavity externally is the morbid convexity internally, and thus, with a fixed ascent of the frog, an unnatural arch is formed: the soft elastic parts of the frog being absorbed, it becomes a rigid protuberance, and is the *rock of danger, on which I am daring enough to assert that the most valuable horses have struck.* This protrusion of frog within the foot is accompanied by an undue concavity of sole and rigidity of the bars. The navicular bone lies transversely across this projecting part of the frog, with the long flexor or perforans tendon passing under, and, by articulating with the bone, forms the navicular joint. The joint receives its share of the superincumbent weight from the small pastern bone, and with violence, in the ratio of rapidity with which the animal moves, and is required to yield and descend in proportion to the impetus. It should also be remembered, that it is placed immediately under the centre of weight, which is conveyed in a perpendicular direction.

Displacement of the navicular and coffin bones

Unnatural arch and protrusion of frog within the foot.

A highly elastic cushion degenerated into a rigid protuberance.

The navicular joint, where situate.

Its lining membrane crushed, constituting the essence of navicular disease.

The occult or partial contraction abruptly opposes the navicular bone in its descent, and thereby crushes or bruises the delicate synovial membrane lining the joint, which suffers a mechanical injury from the very material which Nature bestowed as a defence, and which has degenerated into a hard, rigid, inelastic protuberance, no longer capable of yielding and expanding under the superincumbent weight. Nature has made ample provision to ward off concussion from these parts in the colt or unshod foot; for not only are the posterior parts much more elastic, as compared with the toe and sides of the foot, but she has also bolstered the navicular joint with two elastic cushions placed one on the other, and which, united, form such a hard and soft medium, as no human ingenuity could imitate; the tough, though highly elastic, horny frog being opposed to the ground, and the fatty frog encompassing the navicular bone and flexor tendon, which are further shielded by elastic cartilages. Now, as all these parts, in a state of nature, preserve their elastic properties, they yield and give room for the navicular joint to play like a pulley, without compression or restraint, in the most violent exertions of the animal.

I am thoroughly satisfied, that, when contraction is accompanied with chronic lameness, disease exists in the navicular joint, either structural or functional; and that this complaint, at its com-

mencement, is neither more nor less than a *bruise* of the synovial membrane lining the joint.

Although it appears that some degree of violence is essential to the completion of this formidable disease, yet I am convinced that it does not *originate* in wear and tear, from contact with either the roads of the former or present day: it has, in reality, its origin in *rest*. It is certainly engendered in the stable, but becomes permanently established by sudden violence out of the stable: and I have frequently observed, that, under peculiar pre-existent circumstances, a very moderate proportion of exertion on a hard road or stones has been quite sufficient. Two or three severe days' work in succession, immediately after long continued confinement in a stall, and the hurried pace and distance united, would compel the animal eventually (though perhaps reluctantly) to convey his weight abruptly, and with considerable force, on this obstructing body formed by a fixed elevation of the frog in conjunction with a morbidly thick sole.

Originates not so much from wear and tear as from rest.

I believe Mr. Coleman is of opinion, that a defective secretion of synovia is the first derangement of the navicular joint: this I take to be merely secondary, and for this reason, that I have uniformly found the navicular joint sound, and containing the due proportion of synovia in feet, however much contracted, which had always been known to have been free from lameness. The bruise and conse-

quent inflammation happen either to the synovial membrane lining the flexor tendon where it articulates with the navicular bone, or to the synovial membrane covering the corresponding surface of the bone. To prove the decided character of this disease, I can confidently affirm, that it is uniformly confined to the under surface of the navicular bone, where it articulates with the flexor tendon, and never affects its upper articulating surface, where it assists in forming the coffin joint with the coffin and small pastern bones.

I have frequently seen, in long standing cases of the navicular disease, not only all the cartilage of the inferior surface of the bone ulcerated, but also a material part of this small bone absorbed—indeed almost annihilated; and yet its upper surface, just described, sound, with the cartilage entire, and synovial membrane quite perfect. The truth is, that, in these cases of groggy or chronic foot lameness, the coffin joint is never affected; and I would confidently assert that it never has been affected, except in those occasional instances of extreme violence which may have been tantamount to a fracture, and terminated in leaving the leg and foot together a mere stump, by a general anchylosis of all the joints below the upper pastern.

Coffin joint lameness, error of the ancient writers respecting it: the term become obsolete.

Now to return to the important fact, daily and hourly before our eyes, of the soundness of many fast-working horses whose feet are contracted. I

conceive, that for any one of those contracted feet to be free from lameness, unaffected by quick work, the progress of the contraction must have been as gradual as the process of nature in the renovation or formation of parts, by constant, though imperceptible, absorption and deposit. The living or sensitive parts of the foot have, by decrease, adapted themselves to the diminished capacity of the insensible horny box; and that this frequently occurs without pain to the animals is evident by their performances, and their situation is by no means analogous to the human foot when distressed by a tight shoe. I therefore draw this inference,—that *general* contraction of the horse's foot may take place to a great extent with impunity; but that it is the *partial* contraction or morbid pressure on the navicular joint which is the root of the evil.

Harmlessness of the *general* contraction compared with *occult* contraction.

With regard to the harmlessness of general contraction, abstractedly considered, I think I am sufficiently borne out by the thousands and tens of thousands of contracted *hind* feet, which have always carried their share of the burthen to the end of many a horse that had never received or required the veterinarian's skill.

The navicular joint disease peculiar to the fore feet.

No man has ever been heard to bewail the loss of his horse from being *groggy* behind; but I will venture to assert, that the public have sustained a greater loss of valuable horse-flesh from the havock of this disease alone in the fore feet, than from all

Its havoc dreadful.

A disease of the most frequent occurrence.

the catalogue of diseases to which the limbs of horses are liable, not excepting even the wear and tear of sinews.

It will be recollected that I set out by expressing an opinion, that the custom of confining horses by the head in the stable for days and nights together, was productive of the chronic foot lameness. Although, as far as I am aware, writers on the foot have omitted to remark on this deviation from the natural habits of the animal, yet I am inclined to attach great importance to it, and fearlessly assert that it is one of the chief primary causes.

Importance of turning horses loose in the stable as a preventive of this disease, appears to have escaped the notice of writers and lecturers.

If I were asked what I thought mainly preserved the horse's hoof, in a state of nature, from contraction, even to old age, I should say, the perpetual *motion* to which it was subjected by the natural habits of the animal in grazing; by which is preserved a constant alternate descent and ascent of the coffin and navicular bones within the hoof, under the salutary impression of the superincumbent weight.

Foot of the horse designed by nature for almost perpetual motion.

I shall now attempt to shew in what manner so many contracted feet in daily work escape lameness; but I am referring to such feet only as are contracted, and have been known always to be free from lameness, and they continue to escape until the general contraction becomes accompanied with the partial contraction before described, which, by compression immediately on the *navicular joint*,

obstructs the function of that important and complex part of the foot; and this partial contraction is often prevented from following the general contraction by a combination of circumstances, sometimes the result of chance, and the contraction of the hoof remains harmless. But the absence of the evil is more commonly to be attributed to diligent attention to the foot, and general care of the animal, by economically making the most of a space in which Nature's limits are already infringed upon, and thereby the impending danger averted. This is mainly accomplished by the aid of a loose box, enabling the horse to continue the foot almost in constant motion.

Some contracted feet capable of enduring hard work without lameness, accounted for.

I know that it will be urged, that, as those horses which are confined so many hours out of the twenty-four in their stalls, are not allowed to lie down except for a few hours at night, these parts being placed perpendicularly under the weight, must receive their due proportion of pressure, so that contraction cannot accrue from this cause. This, however, I deny; for the superincumbent weight alone, unaided by frequent motion, is not equal to contend with the frog, the sole, and lengthened toe of a good, firm tough foot, with the accumulation of four or five weeks' growth, in mechanically squeezing them down: for unless these parts are subjected to this motion almost continually, rigidity ensues; and then the first time the animal is hurried a little

Salutary effect of weight and motion combined.

beyond his pace on a hard road, a bruise is the consequence, and lameness is established.

It is evident that, in the inactive state of the horse, the limbs have no other weight to sustain than the mere gravity of the superincumbent matter, each limb supporting only its share of the burthen; but when the animal is in motion, not only is the pressure increased, but the entire weight of the fore quarters, with the head and neck, being alternately conveyed to each fore foot separately, a more favourable impression is made by that weight, and thereby the partial contraction is prevented.

This view of the matter, I flatter myself, will be gratifying to the intelligent and observing Nimrod, whose remarks on horses' feet have been much questioned and scrutinized, because his practical experience has taught him to be wholly indifferent about those contracted hoofs, in which the small bone of the foot is sound: he ridicules the compression on the great bone, the coffin, because there is no *joint* cramped, and therefore no lameness.

He is forcibly struck with this, from the variety of navicular specimens I have had the gratification of shewing this distinguished character of the sporting world: he well knows that many a five-hundred-guinea-hunter has sunk, to rise no more, down to fifteen in a very short space of time, from the ravage of the navicular disease alone. In some instances, this direful malady occupies no more space in the

animated machine than a pea would cover, or the decayed part of a hollow tooth would exhibit. This destructive malady has, on a late occasion, been emphatically expressed, "The curse upon good horseflesh."

I have dissected all the groggy feet that I have been able to collect, and have found the navicular joint diseased in every instance.

Description of the Diseased Joint.

This joint is formed by the navicular bone and the flexor tendon, where the tendon articulates with the bone, being a circumscribed cavity, which is abundantly supplied with synovia, or joint oil, to lubricate and prevent friction between the internal polished surface of the tendon and the smooth cartilage covering the navicular bone.

The advanced stage of the disease is a total destruction of the joint, and which is so completely disorganized, that it can no longer act as a joint. There is not a drop of synovia to be found in it. The cartilage covering the navicular bone next the tendon is either entirely absorbed, or else in a complete state of ulceration; and the corresponding surface of the flexor tendon, which was before as smooth as the highest polish, has now become rough, and the delicate and sensitive membrane lining it, abraded; and in most cases of long duration there is a strong adhesion of the tendon to the

Description of the diseased joint.

navicular bone. When this adhesion, or morbid insertion of the tendon into the bone, is present, there is generally, exclusively of the loss of cartilage, a diminution also of the navicular bone itself, leaving a hole in its centre formed by absorption.

In the earlier stage of the complaint, there is a deficiency of synovia, but not a total absence of it; the secreting or synovial membranes highly inflamed; an absorption of part of the cartilage of the inferior surface of the navicular bone, more particularly in the centre; and a roughness of the corresponding surface of the tendon. At this crisis there is only a slight adhesion of the tendon to the bone.

In very recent cases I have not found the tendon adhering to the bone, but I have invariably perceived a lesion or abrasion of a small portion of synovial membrane from the tendon, and generally that part of it which is opposed to the centre of the bone, exhibiting small streaks or shreds in the tendon; whilst the cartilage covering the corresponding part of the bone has appeared discoloured.

Thick strong hoofs most predisposed to navicular lameness.

This disease more especially attacks that very foot which we are in the habit of calling a strong one, where the fibres of the horn are firm and tough, the toe thick and round, the wall or quarters strong, and high at the heels; the bars strong and deeply buried in the foot; the sole thick and concave. Such a foot is not so much disposed to approxima-

tion of the heels as it is to the occult or partial contraction.

A slight stricture is observable round the middle of the crust, or towards the upper part. When this is not present, there is invariably an indentation or slight falling in of one quarter, generally the inside quarter, though I have observed this on the outside. Constriction of the hoof, and indentations.

With regard to ossification of the cartilages of the foot, and ossification of portions of the ligaments of the navicular bone, and other bony excrescences within the foot, I would remark, that, having dissected so many extreme cases of chronic foot lameness of some years' standing, in which I have found all the ravages of this disease limited to a space within the joint not exceeding half an inch square, and unaccompanied with the slightest disease of any other part of the internal foot, I am induced to consider them as mere effects arising out of the navicular disease; and more particularly, as there are far more groggy feet without the slightest ossification of the ligaments of the navicular bone than with them. In short, I think those who have recently described the navicular disease an ossification of the joint, have erred very much; for it is any thing but an excrescence or exostosis, a great loss or absorption of bone being, in fact, the malady: yet I must acknowledge that I have occasionally seen, in recent cases, a few small eminences on the inferior surface

of the centre of the bone, about the size of millet seeds; but, in the progress of the disease, not only would they have been absorbed by friction, but that portion of bone itself on which they appeared would also have been carried away by ulceration.

REMARKS.

It affords me no slight gratification, that my experience in the feet of horses, as far as it has yet gone, enables me to bear testimony to the truth of very many important points on the foot of the horse, as promulgated by that eminent head and father of our science, Professor Coleman: although I differ from him in practice; and, with respect to the physiology of some important parts of the foot, I must also somewhat differ from the same high authority.

Mr. Coleman says, that the navicular bone is very limited in its action; and necessarily so, first, by the shortness of its ligaments, which confine it to the coffin and small pastern bones; and, secondly, by being so closely bound by the flexor tendon, just previous to its insertion into the inferior concave part of the coffin bone.

On the descent of the navicular joint.

I am of opinion that the navicular joint, being a double joint, adds much to the complicated mechanism of the foot; and as the end of all joints is motion, Nature certainly intended it to have considerable action, although its sphere of motion *appears* very limited.

With regard to its short ligaments, it must be remembered that it is never required to descend, except in connexion with the small pastern and coffin bones; and, therefore, even viewed as a process of the coffin bone, the shortness of the ligaments is in favour of its descent.

As to the binding appearance of the expanded part of the flexor tendon, this does not, in reality, impede its descent, because, at the instant the navicular bone descends under the weight received from the small pastern, the fibres of the flexor perforans muscle are relaxed, and consequently the muscle and tendon are elongated.

Great freedom of motion in the navicular joint observable in clever hacknies

I wish it particularly to be understood, that I ascribe this great freedom of action in the navicular bone only to very sound and good-actioned horses; and, to use a horseman's phraseology, the choice-gifted hackney, which is said to put his heel down as freely as his toe. *Riding* men know—what the *driving* men are not aware of—that it is this sort only which is fit to ride.

Now, let us suppose a narrow-heeled horse (one whose feet are somewhat contracted, or *suspicious* as they are frequently called, but yet known always to have been free from lameness) to be loose in a large box, except during his two or three hours' daily work, which we will say shall average from six to ten miles an hour; let such a horse have, in addition to the indulgence of a well-strawed loose box,—first, a groom who will periodically use the stopping

box; secondly, a thoughtful, steady master; thirdly, a farrier who will carefully shorten the toe, lower the heels, and pare the sole to a nicety, at the expiration of every three weeks; but this farrier must also be an artist sufficient to make a seated shoe of an equal thickness heel and toe (which latter may be slightly elevated), and he must secure the shoe by nailing all round the toe, and avoiding the inside heel, and even the quarter.

Narrow heels not necessarily accompanied by lameness.

I am convinced that a sound horse with narrow heels (if managed in the way I have just described) may be preserved free from the navicular disease to the latest period of life.

How avoided.

By taking all these precautions, with the continuance of gentle motion in a loose stable, the hoof will become elastic, and its elasticity be preserved: the sole and bars, not acquiring an undue thickness, will be at all times susceptible of the natural impression from the coffin and navicular bones, and will yield under the superincumbent weight, and give room for the navicular bone and tendon not only to descend obliquely backwards, but also leave free space for the back action or pulley-like motion of the tendon against the bone at the instant the flexor perforans muscle, by its powerful contraction, lifts the foot again from the ground. Thus the partial pressure or contraction on this important joint being prevented, the general contraction of the hoof is rendered comparatively harmless.

SECOND PAPER;

VETERINARIAN, VOL. III, p. 24.

THE SYMPTOMS AND CURE OF NAVICULAR DISEASE IN THE FEET OF HORSES.

[Read at the Veterinary Medical Society, December 4, 1829.]

GENTLEMEN,

IN the month of December of last year, I had the honour of reading to this Society a paper explanatory of my views regarding the nature of the navicular disease, or chronic lameness in the fore feet of horses, together with the causes of that destructive malady.

The method of treatment and cure is the object of the present paper for this evening's discussion.

The term, navicular joint lameness, recognized by the profession.

This very prevalent complaint, commonly called groggy lameness, has been shewn to exist generally in the navicular joint; and I think I may safely assert, that the term navicular lameness has now become as current among veterinary practitioners as coffin lameness used to be among the ancients.

Although dissection generally affords satisfactory evidence of the seat of disease, yet it does not as uniformly serve us in tracing its causes, the investigation of which is generally involved in more

obscurity, and consequently is too often speculative. But with respect to the probable causes of the disease in question, I think there is as much light elicited by the dissection of the morbid specimen as we could desire. Commencing with the ground surface of the horny frog, and unfolding, layer by layer, all parts, until we arrive at the carious surface of the navicular bone, there will be presented, at one view, that which not only fully explains all the phenomena of the disease, but suggests to us the method of cure, and even points to a rational mode of shoeing.

I beg to observe, that in my former paper I undertook a sort of classification of contraction, or rather its division into two kinds; the one under the designation of *simple* or *general* contraction, such as the narrow-heeled foot with lengthened toe, so very prevalent, and obvious to the common observer; and which is frequently seen unaccompanied with lameness, and even sometimes remains harmless through a long life of hard work. The other I have called the *occult* or *partial* contraction, which is one of the most insidious diseases to which the horse is subject; and so specious is the exterior of such a foot, that none but a most experienced eye would discover the existence of any disease, unless attracted to it by an accompanying lameness; circularity, solidity, compactness of fibre, and an unusual appearance of strength, being its characteris-

Specious appearances of some hoofs.

tics. The heels are high, the sole strong, and the crust thick, particularly at the toe; but it sometimes loses its due proportion of obliquity, and becomes rather more upright than natural. There is, however, a more certain indication which usually presents itself; viz., a falling in of the inside quarter, or slight indentation about the middle of the crust towards the heel: this sometimes assumes the appearance of a stricture, in a slight degree, all round the crust, and occasionally two or three of these strictures or rings are apparent.

Thus much may be observed without the removal of the shoe; but the protrusion of the frog within the foot (adverted to in my former paper), together with the morbid concavity of sole, may not be discoverable till the drawing-knife has been extensively employed, not only on the sole, but in excavating those channels or commissures on each side of the frog, between it and the bars. An inordinate growth of sole and other parts of the foot, by presenting prominent surfaces, too often conceal from our view the encroachments and consequent diminution of the horny cavity. The outer surface of the sole of such a foot sometimes resists the drawing-knife like a stone, from its excessive hardness.

Diminished area of the hoof often concealed by a prominent exterior.

I contend, that the navicular joint disease is generally, though not always, preceded by one of these contractions of the horny box. It may be the ge-

neral contraction first described, or this occult partial contraction.

There will be found an ascent of the coffin bone within the hoof, occasioned by the contraction: it is the *elevation* of this larger foot bone which necessarily puts its small companion, the *navicular bone*, in jeopardy. I say, necessarily; because they are so closely knit together by ligaments, that the smaller bone bears the resemblance of a process to the larger.

Occult contraction of the hoof from below upwards, the most serious encroachment.

The *occult* contraction is chiefly to be dreaded for these obvious reasons: it occasions a more partial pressure, is frequently more rapid in its progress, and, by operating principally from below upwards, has a greater tendency to elevate the coffin and navicular bones.

On the contrary, the *simple* or *general* contraction is a more lateral compression, and so slow in its encroachment, that it affords, perhaps, one of the most striking instances in the animal creation of Nature's resources, when contending against hostile agencies, if she is not too abruptly violated. This is completely verified in the contracted foot of an old hard-worked horse, free from lameness. Nature appears to have had time to adapt herself to the change, without inflammation being induced, in that degree, however, sufficient to occasion pain.

The most obvious effect of contraction, whether of the simple or occult kind, appears to be absorption;

viz., *the pulpy substance, commonly called the fatty frog or elastic cushion, becomes in part absorbed.* The cartilaginous or reticular portion, being a harder body, remains ; therefore, it still retains its form in a condensed state, and is yet an elastic substance, although degenerated into a hard bed instead of a soft one. Thus it is that that portion of the main back sinew of the leg, the flexor perforans tendon, where it forms the navicular joint, is no longer embedded in such an elastic medium as would defy all human ingenuity to imitate, which was the original and healthy condition of the fatty frog.

Absorption of the fatty frog.

The dilapidated state of this spring affects the elasticity of the posterior parts of the foot in other ways besides the resistance it opposes to the navicular bone in its descent ; for I believe the fatty frog, as it is called, to be an organ which performs *several* important functions, as regards elasticity alone, and that there is an additional reason for the larger half of this elastic mass being placed posterior to the navicular joint, besides that of expanding the lateral cartilages from its continuity. For, when we consider the extensive pulley-like motion between the tendon and the navicular bone, and that all the upper part of this pulley-like surface, from the oblique position in which the bone is placed, could not be benefitted by a spring immediately under it ; and taking also into the account,

that the navicular bone, in its descent, must incline backward, in unison with the motion of the coffin bone, it follows, that a soft pillow was as much required at the back as at its base: and, indeed, a more extensive one, as the back part of this surface presents a larger space than the inferior.

Notwithstanding all this difference between the soft bed and the hard one, still it cannot be denied that there are many thousand horses in this country so circumstanced, which travel perfectly free from lameness; though I much doubt if any one of them retains the full degree of elasticity in action which he originally possessed.

But the absence of lameness is by no means a proof of the harmlessness of this antecedent disease; for the navicular joint of such a foot, although sound as adamant, and its surfaces polished like ivory, and duly lubricated with synovia, is in jeopardy, and only requires two or three more concurring circumstances to effect a lesion within its delicate organization; and this frequently happens instantaneously.

Rigidity of foot. I conceive that the rigidity of the posterior parts of the foot (the navicular joint not having suffered any injury) conveys to the animal the sensation, not of pain, but merely slight restraint or compression, which is attended with a corresponding want of confidence, that induces him to give an undue bias to the weight towards the toe or front of his foot;

the laminæ of the fore part of the coffin bone sustaining the burden, while the navicular bone and heels of the coffin economically receive only so much of the superincumbent weight as the degenerated harsh spring may be able to dispose of; and therefore a *condition of the foot is produced which approaches to disease.* Thus, I think, may be solved the greatest of all mysteries regarding excellence in the movement of this incomparably useful animal, viz. that a valuable horse, highly gifted with action, and in the prime of life and spirits, suddenly ceases to convey to the rider that indescribable pleasant sensation which had always before distinguished him from common horses; *his action becomes limited in his slow paces* without any apparent cause; and yet his mode of going might defy the competent veterinarian to pronounce him lame, although brought cool from the stable on the pavement; and the owner is the more perplexed, in proportion as he himself attempts to ascertain the cause. If the horse happens to be a fast trotter, he tries him for a spirt; and is impressed with the idea that he never performed his mile in less time in his life.

Diminished elasticity without lameness.

If, instead of a trotting horse, it be an accomplished hunter, he returns from the chase, and exclaims in ecstacy, "We have gone the best pace without a check, and he has carried me brilliantly!" when, perhaps, on the preceding day, he had ridden him five or six miles, at a walk or *slow* trot, and re-

turned thoroughly disgusted with him; for, instead of performing with his wonted grace and elegance in a firm, flat step, not only regardless of the weight of his rider above, but equally as independent of the stones below, he shuffled, broke frequently from the walk into a jog, dropped occasionally, and now and then dug his toe or pegged it against a stone, a failing before unknown with this faultless animal. Under these inauspicious circumstances, the style of his slow trot, to a by-stander, would appear only on a level with that of a sound horse possessing merely the ordinary degree of action, so that the owner would be the only person aware, from his knowledge of the previous merits of this animal, that he had lost any thing. Now, you will naturally ask, What has he lost? I answer, *the equilibrium or natural adjustment of the superincumbent weight, the laminæ in front of the coffin bone sustaining an undue proportion*, whilst the function of the laminated structure of the bars and heels is limited, or partially suspended. Hundreds of horses, and even young ones, are annually sold in London as sound which have suffered this deterioration, in defiance of the most scrupulous examinations as to soundness.

Loss of equilibrium or natural adjustment of the superincumbent weight.

Now you will contend that, in the case I have proposed, of the horse being capable of trotting at the rate of twenty miles an hour, or being a weight-carrier up to the fleetest hounds, that he must pos-

sess elasticity:—granted; but the question is, not what he now has, but the degree of elasticity he once possessed; and we can judge of perfection only by comparison.

Even a confirmed groggy horse, incurably lame, might be selected to accomplish one or other of the feats I have just mentioned; though I must acknowledge it would put in requisition the rare remains of one of Nature's masterpieces: still such a description of horse is to be found.

It therefore appears, that an incipient defect of this kind may, under certain circumstances, alter the animal's action without occasioning lameness; and that a horse, either of breeding or of good mettle, when called into quick movement, has his energies so far excited as to be totally regardless of the rigidity of this spring; that is, supposing the navicular joint to be unimpaired.

Gentlemen, I fear you will think me prolix, especially as the object of this paper is the treatment of disease; but I cannot forbear, since this is the precursor from which the foot is suffered still further to degenerate, oftentimes for many months, before the most attentive observer thinks of consulting us (being unconscious of any disease existing), whereby our skill is frequently baffled in the treatment of the other formidable malady, which sooner or later supervenes. Moreover, the public have never been sufficiently warned of this antecedent disease by any

The precursor to navicular lameness.

writer on the foot: of course, I allude more particularly to the occult contraction, as connected with navicular lameness. The timely application of remedial measures for the *prevention* of lameness would contribute more to the public weal than the discovery of an infallible cure for glanders; of such frequent and daily occurrence is this chronic foot lameness.

Importance of remedial measures to this antecedent complaint.

If the foregoing observations are well founded, it follows, that one of the first indications of cure will be *the depression of the coffin bone*, in order that that bone, together with the navicular, may resume its original and natural situation, which will be found, on the inspection of a considerable number of colts' feet, between the ages of three and four years, to approach much nearer the ground or base of the foot than is generally supposed.

By way of illustration, and speaking generally, I will venture to assert, that the nearer the heels of the coffin bone, by the conformation of the foot, reach the surface of the ground, the less likely is the navicular joint to become diseased, and *vice versâ*. Such instances are numerous in low heels and flat soles; but when these weak, thin feet occasionally fail with navicular disease, the cause is totally of a different nature, and may be generally traced to an accidental bruise from a stone.

On this principle I account for the well-known fact of a certain description of active horses, possess-

ing little or no pretensions to breeding, and heavy cart horses, which appear exempt from contraction through life, resisting the constraint even of iron and nails. Their escape is owing to peculiar conformation, not only of foot but of leg, possessing large flexor tendons, likewise peculiarity of action, being all flexion with very little extension (going diametrically the reverse of the blood-horse), with their knees up, and flat upon their heels. In fact, they are for ever on their flexors, putting the elastic laminæ of the heels and quarters so much upon the stretch, as actually to influence and increase the obliquity of the crust even in front of the foot: thereby keeping *down* the navicular and coffin bones sufficiently low, *in defiance of iron and nails.* I may, therefore, almost say, such horses never have navicular disease, except when it occurs from an accidental cause, such as a severe wrench from slipping the foot in a hole, or any other sudden external violence. In such occasional cases of lameness, contraction of the hoof will be the effect of navicular disease instead of the cause.

Cart horses and horses of peculiar conformation and action, almost exempt from contraction.

The reasons explained.

Curative Treatment—The means by which the Coffin and Navicular Bones may regain their original stations, and be retained therein.

Here, Gentlemen, in my humble opinion, has been the stumbling-block. It is known and admitted that the ancient, as well as modern veteri-

narians, were successful in removing this lameness for a shorter or longer period; but books, both of the old and modern school, abound with the fact of the too frequent recurrence of the disease, and its termination in permanent lameness. A most formidable barrier has been suffered to remain, which has rendered our skill abortive, even after we have removed the lameness and quelled all inflammation within the joint; for just here, too often, our exertions have ceased, having only subdued, though not crushed the enemy; that is, we have quieted the inflamed parts, but actually left them in the same state of dangerous encroachment on each other as had before proved the predisposing cause of lameness: viz., *the unnatural elevation of the navicular bone and heels of the coffin bone;* therefore, a less assemblage of concurring circumstances than before will be sufficient to establish another attack of lameness, and much less of the immediate or exciting cause after each succeeding attack. But, to speak more plainly, if one bustling trot over the stones from this place to Mile-End would not effect it, a very few journeys of that sort, in quick succession, would almost ensure it.

Specific directions for opening the foot.

Nevertheless, these elevated coffin and navicular bones are not to be replaced in the first instance by any compulsory measures whatever; but the *treatment* should commence with the soothing system, viz., the abatement of inflammation, by *abstracting*

blood locally, until the system is affected generally.

Six quarts of blood to be drawn at one operation from an artery encircling the lower edge and toe of the coffin bone, the hoof having been prepared as follows:—The sole to be pared till small specks of blood begin to appear at every part; the bars to be entirely removed; and those channels or commissures between the bars and the frog to be excavated with a narrow drawing-knife to the quick, from end to end; the projecting part of the crust, which forms the ground surface, to be somewhat levelled with the rasp from toe to heels; but the shortening of the toe and lowering of the heels to be deferred till another stage of the treatment.

Abstraction of blood from the lame foot until the heart sympathizes.

With the next process which I have to recommend, I am apprehensive many practitioners may, at the first view, be somewhat startled; but I pledge my professional credit on the safety of the practice.

It consists in the entire removal of crust or wall at the inside heel, and of the bar adjoining, with rasp and drawing-knife, as near to the laminæ as possible, without drawing blood, and extending this excision along the quarter, according to the urgency of the case, and the period of time allotted by the owner for treatment and rest, thereby leaving the inside quarter isolated from the other parts of the hoof. The direct object in view for sacrificing a portion of hoof so slow of growth *being to unfetter the inside heel of the coffin bone by taking off lateral*

Excision of the inside quarter of the crust.

pressure from the wing of that bone; but, after all, it must be admitted, that it is only the removal of an offending body; and I am urged to do this, not merely because I know it will grow again, but because I also know it will be my own fault if it be not reproduced in such an expanded direction as mainly to contribute towards the cure.

However, I generally find it prudent not to penetrate into the quarter more than about half an inch anterior to the heel of the coffin bone, terminating the scalp abruptly, which extends from the upper part to the basis of the crust in a straight line, preserving all the other parts of the quarter in nearly their natural substance; but this extensive sacrifice of crust may be quite uncalled for in many of the recent cases of lameness.

A bar shoe bearing on the outside quarter, and slightly on the frog, is now to be fitted to the foot upon the *unfettered* or side-nail plan; but previous to its application the artery at the inside toe to be opened, and the blood drawn as described; the shoe to be then applied, and the foot and coronet immersed in some cold emollient paste.

Laxative medicine.

Half a dose of purging physic should be given, and the horse turned loose into a large box, without exercise; his diet the same as in physic; the emollient paste to be applied the next day, lukewarm, and repeated daily.

About the fourth or fifth day he may be walked

out upon some litter, for about twenty minutes. About the sixth or seventh day after the operation, the shoe to be removed; and, if the orifice of the bleeding place is found to be healed, and free from fester, the blood-letting is to be repeated on the opposite toe, approaching towards the outside quarter. Immediately before the repetition of the bleeding is the proper time to lower the heels and shorten the toe *as much as they will bear*, yet taking particular care to leave a sufficient body of crust, at every part, to afford a solid basis for the shoe to rest upon, except at the inside heel, which has before been directed to be entirely removed.

Repetition of blood-letting.

With this fresh paring of the foot, the shoe will require to be refitted, and a single hole punched in the inside quarter, in order to receive a nail as a substitute for the one necessarily left out at the second perforation in bleeding.

The emollient paste and half dose of physic to be repeated, and the horse kept quiet for two or three days; after which time his exercise should not exceed a foot's pace. In about a week from the second bleeding the sole and commissures will admit another trimming; but the crust, bars, and frog, should now be allowed to grow.

At this stage of the case, an ointment composed of tar and hog's-lard should be applied cold to the sole, instead of the emollient paste, which may be still continued to the crust.

What has been said applies to a case of lameness of one foot only. When both fore feet are affected, I usually take about five quarts of blood from the lamer foot, and two quarts from the other, on the same day.

The sole and every part of the hoof should now be suffered to grow unmolested, except the toe, which is to be abruptly shortened at the expiration of every fortnight, regardless of the disfigurement of the foot, only taking care not to risk suppuration or fester by approaching too near the quick.

A loose stable with a sawdust floor.

This, however, must be deferred till the horn at the bleeding orifice is sufficiently restored to allow of the horse standing without shoes, which may be soon discontinued, provided the patient is turned in the daytime into a loose box floored with sawdust, which should be watered daily.

I have a twofold object in view for thus shortening the toe at this stage of the treatment: it will be remembered that the entire base of the foot, together with the inside quarter, including the bars, commissures, and frog, have been already *unfettered*, consequently the aptitude of these parts to receive the superincumbent weight quietly in the stable cannot, I think, be questioned by any unprejudiced veterinarian: to me it appears the critical moment for effectually expanding the foot whilst the fibres of the hoof are as flexible as wet paper, not by the unscientific force of a wrenching screw-shoe, but

by the salutary pressure of the animal's own weight; thus rendering every minute that the horse stands conducive to the *depression of the navicular bone and heels of the coffin bone.* But it should be observed, that I am not urging the patient to bear his weight on the diseased joint till after its inflamed vessels have been relieved by the bloodletting.

Replacement or depression of the coffin and navicular bones.

The other advantage accruing from the removal of the toe is, the freedom which it affords to the quarters, by diminishing the great resisting power of the crust (which is generally morbidly strong at the toe in navicular lameness), and thereby favouring the return of the navicular bone, and heels of the coffin, to their natural situations in the horny box.

Those of the old school were accustomed to rasp the crust in front nearly to the quick, from the coronet three-fourths down, a practice which is now quite discarded, and, in my opinion, with sound reason, owing to a practical inconvenience which almost invariably occurred from it, viz. a transverse fissure or cleft between the new foot and the old, when the crust had grown about three parts down, and of itself a source of pain and lameness. The plan I propose is exactly the reverse, and consists in *removing* only that lower portion of the crust which they as studiously retained.

But there is another old method deserving of no-

tice, which is, that of applying a high patten shoe to the sound foot, for the purpose of compelling the horse to stand upon the lame one, and which I highly approve as a principle in the treatment of these cases; but I much doubt whether it answers the intended purpose in the manner it is usually employed. It undoubtedly does oblige the groggy horse to bear more weight on the lame foot than he would have done without such constraint; but let us see how the suffering animal instinctively disposes of this distressing burthen: his coffin bone being sound, and his navicular bone being diseased, and perhaps carious, he will therefore naturally incline his weight towards the front of the foot, or fore part of the coffin bone: this will have no tendency to depress the heels of that bone, which, in my humble opinion, is of paramount importance.

On blistering. With regard to the application of blisters to the coronet, I am enabled to assert, that I have radically cured very numerous navicular cases by the aforementioned treatment without their aid; yet cases of this disease do occur in which I consider them important auxiliaries.

Setoning, &c. It may probably be expected that I should remark on frog setons: I have only to observe, that I do not adopt them; and I will here state my reasons.

As the treatment which I have recommended tends to restore lost functions to those highly elastic organs which are placed at the posterior parts of

the foot, partly by conciliatory measures, as well as by some coercive means united, such as will induce the animal to stand again on his heels and back sinews, instead of his toes and extensor tendons, I cannot with consistency pierce a deep hole through the horny and sensible frog, the very organ which I am most anxious for the animal voluntarily to recline his weight upon, during the progress of cure.

GENERAL REMARKS,

WITH FURTHER OBSERVATIONS ON SYMPTOMS.

In the advanced stage of navicular disease, or grogginess in the fore feet, attended with considerable lameness, the symptoms are usually so strongly marked that it would be almost impossible for two able veterinarians to disagree in determining on the seat of disease; and therefore I cannot bring my mind to admit the expediency of a long detail upon a subject which is familiar to all horsemen of every grade, provided they have been accustomed to the several varieties of horses. On symptoms.

The symptoms of the *precursor*, or disease antecedent to navicular lameness, I have attempted to point out, although, I fear, with tedious precision.

But with regard to the diagnosis of *incipient* navicular disease, on further reflection, I most fully concur with our Veterinary Society in its import-

Difficult of description.

ance, and the necessity there is for some practical rules being laid down, by which we may readily pronounce on the existence or non-existence of this *joint* disease; but yet I cannot persuade myself that I can represent on paper the rules which have hitherto been my guide. Experience, however, has enabled me to decide on these cases with confidence, having devoted myself more particularly to foot lamenesses.

As we cannot have navicular lameness without inflammation of some part of the joint, which may be seated in the synovial membrane, or in the tendon forming the *exterior* of the joint, it may be as well to advert to the known symptoms of inflammation: First, increased redness; secondly, swelling; thirdly, pain; fourthly, increased heat. *Now*, let us see how these four great lights conduct us to the navicular joint.

The first of these characteristics, viz. *redness*, avails us nothing, the surrounding parts being covered with hair. The second, *swelling*, is seldom manifest in these cases, the inflamed parts being inclosed by the hoof. Third, *pain*, although indicated by lameness to exist in some part of the limb, is not sufficient to guide us to the exact site of the disease. Fourth and last, *heat:* this is too often fallacious; horses, like ourselves, are naturally subject both to hot and to cold feet when in health; and, further, I have frequently met with chronic

cases of navicular disease where the lameness has been perpetual though slight, in which no increased heat was perceptible in the coronet, or by feeling the *surface* of any part of the hoof. With the symptoms so unexpressive, I usually pare the soles of both feet extremely thin, when the extra proportion of heat in the lame one will be generally apparent by comparison with the other; but the throbbing of the pastern arteries is a more important criterion.

The other indication, viz. swelling, is only an occasional symptom of the disease, exhibited by a slight fulness round the coronet immediately above the hoof, which, when present, requires the discriminating eye of experience to discern it, and is generally most evident on the inside, towards the indented quarter of the hoof.

Pointing of the feet, not well understood by the public.

Pointing of the feet, or shifting one foot before the other in the stable, is doubtless expressive of pain, and is of itself a striking symptom of navicular disease; yet it cannot be denied, that there are many horses which have pointed their feet for years, and remained free from lameness even in quick work. In such cases, I am of opinion there exists a dull chronic inflammation in the tendon exterior to the joint, the articular surfaces of the navicular joint remaining quite perfect in structure.

Although all groggy horses do not point, I mean to contend, that a much greater proportion of those

labouring under navicular lameness do evince this symptom than is generally known.

I usually ask the question, in these cases of lameness, whether the horse points his foot; and am frequently answered by the master and servant, both at the same instant, in the negative; and very fairly too, they not deeming the horse a pointer unless he projects his foot under the manger. However, my rule is, never to place any reliance on this statement; and, therefore, on a quiet examination in the stable, *unobserved* by the animal himself, I generally catch him in the fact; probably not extending the lame foot out a yard before him, but projecting only about a hand's breadth before the other foot, the muscles of the sound limb tense, and principally supporting the superincumbent weight, whilst all the joints of the lame limb would faintly exhibit a relaxed position, the animal evidently reclining his weight on the extensor muscles and tendons, from the knee to the front of the large pastern joint, not conveying any to the sessamoids, and, finally, receiving it entirely on the front of the foot.

False pointing; some horses conceal the act.

Many horses acquire this mode of shifting their weight in the stable without pointing the foot, or betraying the least visible suspicious circumstance, except to a judge expressly on the look-out.

As a proof, I have repeatedly seen the lame foot apparently flat on the pavement, when, on a more

close inspection, I have observed a sound straggling straw or two lying between the heels of the shoe and the pavement remaining entire, and escaping being flattened for a considerable time, in fact, till something disturbs the animal, or attracts his attention. I could very much wish to call this *false pointing*, in contradistinction to *direct* pointing. Direct pointing There is also another mode of shifting and easing the foot, which is more obvious, viz. the bent or tremulous knee.

Pain, together with this continued habit of resting, diminishes the size of the limb generally, from the hoof even to the muscles covering the shoulder-blade or scapula; but in cases of very long duration, I beg to invite your attention to a considerable alteration in the mass of muscle immediately above the olecranon, called the triceps extensor cubiti, which seems preternaturally contracted, and ceases to exhibit that plump and prominent appearance observable in the sound limb of the living and well-formed horse.

Running the patient in hand at a slow trot materially assists us in forming our diagnosis, by observing the manner in which the lame foot is placed on the ground, whether flat, or principally upon the toe or the heels; but I feel quite at a loss to delineate on paper the peculiar gait of the animal, which I have observed in these lamenesses.

Before I pronounce the case to be navicular lame-

Importance of accurately comparing the lame foot with the sound one as to the exterior.

ness, I scrupulously examine the *external* foot for every probable cause of lameness; and, having removed both shoes, and pared the soles, I minutely compare the ground surface of the lame foot with the other, to ascertain whether occult contraction has taken place or not: this is not, however, to be expected in every case, at it is well known that many navicular lamenesses have occurred momentarily, as in hunting or other violent exercises. I have omitted to mention, in the requisite order, another not unfrequent cause of navicular disease, viz. the general inflammation consequent upon the accident of casting a shoe, and the animal travelling a considerable distance before the rider may have been apprised of it. It is not very uncommon for such an injury to leave a chronic lameness after the complete reproduction of horn, which may have been a process of many weeks' growth.

We are called upon to treat the navicular disease under various degrees or shades of the same disorder. The case may be either acute or chronic. The lameness may be as sudden and considerable as that which sometimes proceeds from a fractured pastern or cannon bone; or it may be so slight as to require a close inspection on pavement to discern it. The disease may have been of very long or short duration, and yet exhibit lameness only in a slight degree.

A horse that had never shewn an hour's lameness

in his life leaves his stable in the morning perfectly sound, continues sound the greater part of his journey, and momentarily, without any apparent cause, drops violently lame: the rider as suddenly dismounts, with the impression that his horse has picked up a stone; takes up his foot, but looks in vain for the stone, or any other cause to account for this visitation; and many instances will this recall to the reader where horses were never subsequently restored to a sound working condition.

Such a lameness I conceive to be an actual lesion or rupture of some part of the delicate synovial membrane; and although there are few opportunities of dissecting these cases of lameness, when recent, yet I think I have observed that which will warrant me in stating, that the membrane lining the tendon is more frequently the part first injured than the bone or its synovial covering, the spot being generally within or very near the concavity in the tendon which receives the corresponding convexity of the navicular bone. But when the bone or its articular cartilage exhibits disease, it is invariably confined to that portion of the under surface of the navicular bone which is placed nearest the sensible frog, and is most apparent towards the middle of the convex ridge of that bone.

Navicular joint disease at its commencement admitting of an easy and certain cure.

From the facts that I have collected relative to groggy lameness, I am thoroughly convinced we have as much control over the early stage of this

disease as we have over any less important organ when attacked with inflammation; for, complex as this joint confessedly is, and although composed of materials such as tendon, ligament, and cartilage, parts not remarkable for inherent renovating qualities, still I am convinced they possess enough for our purpose, provided we act promptly.

The first step, and which is indispensable, consists in bleeding from the inflamed part till the quantity abstracted locally has affected the constitution generally.

On copious bleedings locally.

I should like to be informed whether this plan of combating with local diseases of the inflammatory kind is practised in human surgery—that of abstracting *arterial* blood locally till the heart and system generally are affected.

I hope you will excuse the introduction of the following speculative remarks as to the *modus operandi* in this method of bleeding.

When inflammation exists in the limb of any animal to an alarming degree, it is not sufficient merely to lessen the contents of the inflamed vessels, and materially diminish their volume, but one thing more should be effected, precisely at this juncture, viz. syncope, or that state of the heart which is a near approach to it; and thus, for one or more moments, the whole vascular system is interrupted or stopped; but reaction presently succeeds in the capillary vessels of the inflamed part,

which, before the blood-letting, were on the point of rupture or loss of vitality, arising from over-distention, and which have just time to contract vigorously on their diminished contents one second before the fresh charge is supplied from the great pump and arterial trunks.

It may be argued, that the taking of one half the quantity from the part affected, and the other half by general bleeding, in immediate succession, would answer the purpose equally well. I apprehend not, and for this reason: that I conceive the influence of the operation on the inflamed part and on the heart is reciprocal by the plan I have proposed; but in the other method there would be this important difference, that while blood was flowing from the system generally, the reaction would commence in the capillaries of the inflamed part before syncope could be produced, and therefore just at the crisis their volume would have again become too great for the vigorous contraction before mentioned, and, consequently, the patient would only be relieved, instead of being cured.

Detrusion of the coffin and navicular bones.

Another indication of cure, and which is of no less importance to prevent the recurrence of inflammation within the navicular joint, consists in the return or *detrusion* of the coffin and navicular bones to their original and natural situation within the horny box; but even this having been accomplished, and the case no longer requiring treatment, we have yet

another duty to perform: this is, to warn the owner against the *slow though certain* evil that will again accrue to this joint if the animal is subjected to long intervals of confinement in a stall, one of the remote or predisposing causes of this disease, and which is almost invariably applied to the greater proportion of the most valuable horses kept in London.

Liability of this disease to return, upon the animal being subjected to long intervals of confinement in a stall.

Servants have an aversion to dirty their horses' legs when their masters omit to work them.

Touching my remarks on this unnaturally quiescent state of the foot, together with the various concurring circumstances which establish this destructive and prevalent disease, I beg leave to refer you to my navicular paper, published in "THE VETERINARIAN" of February (1829).

I feel particularly anxious not to be misunderstood as to the kind of navicular cases that I have confidence in being able to cure.

Circumstances under which a cure will be the most certain.

With the acute or recent case, accompanied by very considerable lameness, there will be a better chance of a radical cure than with a chronic case, attended by only a slight lameness, though both such cases may, nevertheless, be within the pale of perfect recovery.

A large number which we are called upon to treat are cases of long standing, but yet not notoriously lame horses. Some of these that may not admit of a radical cure, owing to the duration of the disease and consequently defective organization of the joint,

may yet be relieved beyond the most sanguine expectations of their owners, by removing the rigidity of parts (as before detailed) exterior to the joint, and constantly furnishing emollients, in order to preserve elasticity.

On the other hand, there are many in the more advanced stages of navicular disease afflicted with a degree of lameness distressing to behold, which are greatly relieved by a directly opposite mode of treatment; such as giving way to the disease by allowing the heels to grow high, propping them up with thick heel shoes or calkins, and facilitating the efforts of the extensor muscles to catch the superincumbent weight, which thereby falls exclusively on the coffin bone, leaving the carious navicular bone exempt from its share of the burthen. This plan of treatment mitigates the animal's sufferings, but precludes the possibility of cure. Yet in such a lost case this is the most humane and rational mode of proceeding.

Chronic cases in some instances utterly hopeless.

Mr. Professor Dick, of Edinburgh, has lately remarked, that the ulcerated surface of the navicular bone, in protracted or severe cases, is frequently so extensive that, after the nerves have been divided, the *friction* between the tendon and the navicular bone completely divides the tendon, and the pastern falls to the ground. I advert to this for the purpose of shewing, that the *friction* here alluded to is not always necessary to constitute the failure of the ope-

ration in old and extreme cases of the disease; for I have, on several occasions, been an eye-witness to the giving way of the flexor perforans tendon at this part, immediately on the animal's being allowed to get up after the operation of neurotomy, and the pastern let down accordingly. To prove that very many of these advanced cases of navicular disease are altogether improper subjects for the nerve operation, I have repeatedly, on the dissection of such cases (which have been destroyed by their owners rather than have them submitted to the operation), observed the tendon so attenuated by absorption opposite the caries of the bone, that, upon holding it up between the light, I could distinctly see through its few remaining fibres.

On neurotomy.

This single pathological fact clearly shews the control which is reserved to the afflicted animal over his extensor muscles, in rendering them subservient to the flexors, and thereby averting the rupture of this disorganized part; and which is never known to happen, however extensively diseased, unless neurotomy has deprived it of feeling.

Notwithstanding these unsuccessful cases, I have much to say in favour of the nerve operation, for the practical utility of which we are unquestionably indebted to Mr. Wm. Sewell, of the Royal Veterinary College; but I feel no reluctance in postponing my remarks on that subject to a future opportunity, seeing that its merits and demerits are now under

the investigation of an able and experienced member of our profession, Mr. Castley, Veterinary Surgeon to the 12th Lancers.

I have much to point out on a particular method of shoeing, which favours the return of the navicular bone to the original station allotted for it within the hoof, but which, however, must be reserved for another occasion.

The veterinary profession and the public are much indebted to Mr. Joseph Goodwin for a very scientific work on shoeing, published a few years since, giving an account of the various modes of shoeing horses, as practised by different nations.

Most of the old writers on the foot of the horse remark on the constraining effect of iron and nails on the hoof; but their evil tendency is more plainly shewn by Professor Coleman in his "Treatise on the Foot." Nevertheless, we are indebted to Mr. Bracy Clark's incessant and forcible declarations respecting their baneful influence, which have been published since; and yet this shrewd observer continues to *fetter* the foot with them on both its sides, although practice now shews that full one-half of this complex organ may be left *free as air*, and yet perfectly *defended*. On shoeing.

The view I take of the matter is this:—That nails, in a clenched state within the quarters of the hoof, are not only detrimental to the sensitive organs contained therein while the animal is in rapid motion,

and requiring the utmost dilatation of the organ; but I believe this delicate piece of mechanism suffers from their baneful influence much more by slow degrees, while the foot is in a quiescent state, during the animal's long confinement in the stable, as they mechanically assist in opposing the descent of the heels of the coffin bone, by their rigidity against the wings of that bone; and therefore may be considered as the first, if not the chief, predisposing cause of the *equilibrium, or balance of weight, being lost within the foot.*

Baneful influence of the nails.

THIRD PAPER;

Veterinarian, Vol. II. p. 279.

EXPOSÉ OF THE CHIEF ERROR IN THE PRESENT SYSTEM OF SHOEING HORSES, AND AN IMPROVED METHOD SUGGESTED.

By Mr. James Turner, Veterinary Surgeon, Regent Street, London.

Mr. Editor,

Sir,

Should you deem the following practical remarks on shoeing, or rather the method of affixing shoes to the feet of horses, worthy a place in your invaluable journal "The Veterinarian," you will oblige me by inserting this letter.

A short time ago, in the hurry of practice, my attention was suddenly attracted by a most extraordinary alteration having taken place in the shape of the fore feet of a horse seven years old, which had literally changed from an oblong to a circular shape, in the short period of a few months, although exposed to quick work daily on the hard road, and without any person being aware that means had been resorted to for effecting such a purpose.

Case of contraction cured during exposure to hard and quick work on hard roads.

On my investigation as to the cause of this important benefit which the feet had derived, it turned out that I had been consulted by the owner of this horse, some months previously, respecting his being

a determined *cutter* before, both his ancles being then raw from the repetition of blows. His feet were exceedingly contracted; but I consider it necessary to acknowledge that the horse was perfectly free from lameness, and that my assistance was only required by the owner relative to the cutting. Accordingly, I gave my own shoeing-smith directions to shoe both fore feet to the extreme, *against cutting*, as follows:—A shoe of moderate substance, and of equal thickness toe and heels, to be nailed at the toe and outside quarter, with an extra nail or two at the outside heel, but *not a single nail to be driven or hole punched in the inner half of the shoe*, except one a little inclined to the inside *toe*, and all the inner edge of the shoe, that otherwise would have been fullered, to be bevelled off, to prevent the possibility of the iron interfering with the opposite leg, and, of course, to avail himself of a further advantage by rasping away the inner wall of the hoof as much as possible, without rendering the horse tender in his work, by approaching too near the quick. It was also arranged that this plan should be followed up at the termination of every three weeks, whether the shoes were worn out or not, and which was strictly attended to.

Necessity of the repetition of this plan every three weeks.

At the expiration of three or four months, this method of shoeing proved not only a perfect remedy for the cutting, but it also effected a most important

change in the shape of the hoofs, which altered from *contracted* to *open expanded feet*, during the performance of very hard work. That this plan should have proved a remedy for the cutting, was no more than I expected, because it had succeeded in numerous instances; and I acknowledge the practice is nearly coëval with shoeing itself; but if in this said old method of shoeing, somewhat modified, there is to be found the necessary defence for the foot without the natural expansion of the hoof being impeded or restrained by the ring of iron nailed thereon, or, in other words, which will admit of all the functions of the foot being duly performed, I will venture to pronounce it the horseman's grand desideratum.

A monstrous evil in the art of shoeing practised in every age and in all countries.

The great *mistake* in shoeing, which in all probability originated with the art itself, and has continued up to this hour, consists in the nailing an unyielding body of iron to *both* sides or quarters of the foot, when, in truth, there is a *necessity* for the *one* side only to be bound or hampered by this iron fetter.

Now, Mr. Editor, I surmise you are about to ask me, whether I have discovered the means by which the necessary protection of iron can be attached and secured to the foot during constant and quick road work, and yet pierce *one* side only of the hoof with *nails*. My answer is in the affirmative, and the proof I have subjected to the test of road work

equal to posting. But the fact is, in the majority of instances, no more is necessary than a little extra nailing, as to number, in the outside quarter, accompanied with small clips judiciously applied, in order to secure the shoe during a month's wear. It will hereafter be seen, and I pledge myself to shew, that if the inner wall or half the foot be duly protected, free of restraint, that the outer wall, or other half of the foot, will take care of itself, or rather is capable of resisting the restraint which the shoe and nails oppose to it.

One side only of the hoof being nailed, both quarters are at liberty to expand.

The inside heel of the horse's fore foot cannot certainly be said to be this animal's only vulnerable part; but it may almost be considered so in comparison to the outside heel of his foot; for, if we search for corn, we go immediately to the *inside* heel; but we should no more expect to find a corn in his outside heel, than we should in his hind foot, although it must be admitted this disease does *occasionally* exist in these parts. Contraction we generally find to the greater extent in the *inside* quarter; and it is also the seat of sandcrack nine times out of ten, in comparison to the outside. In short, I would say, that the inside quarter of the foot is its *wearing place*, if I may be allowed such an expression.

The inside quarter of the foot notoriously the principal seat of disease.

On inspecting the unshod foot of a four-year old colt (which is fully developed at that period of life) it has been the fashion for veterinary writers to con-

sider its ground surface as a circle. To this I have much objection, having always been struck by the great inequality of its two sides, not only as to the additional thickness of the wall of the outer quarter in comparison to the inner, but the still greater difference in compass or circularity; the outer quarter furnishing far more than is necessary to form the half circle, while the inside is generally much less than a semicircle. This bulge, or fine luxuriant growth of the outside quarter, is generally most apparent towards the heel, not only forming a much broader basis of support for the superstructure than the inside, but also one of immense strength. The inside column of crust being less strong, and yet placed more immediately under the centre of gravity, it appears to me quite obvious, that Nature intended the outer column or quarter should serve as the main prop of support, whilst the inside quarter, in proportion to the weight and speed of the animal, should expand and oppose concussion.

The circularity of the natural foot denied.

But however conspicuous this fine prominence or extensive grasp of the outer quarter of the unshod foot may have appeared at three or four years' old, we may in vain look for it after the horse has been shod and stabled for the short space of one year; and in some instances all traces of it are lost in much less time under *very* gross shoeing. I cannot see how it should be otherwise, when it has

not been customary for authors on the foot and shoeing to have given the smith specific directions to attend to this peculiar conformation of the outside quarter of the foot; but have left this rude artisan to suppose, that when he applies a shoe of a circular form to the colt's foot, he is imitating the natural shape of the hoof: but that the colt's foot may be made to assume such a shape, how grievously must the drawing knife and rasp first mutilate the outside quarter or wall, instead of merely removing superfluous or exuberant parts.

Importance of preserving the bulge or prominence of the outside quarter of the hoof.

I am the more induced to insist on the necessity of the flowing outside quarter of the colt's foot being held sacred, and to shield it from the outrage of the rasp, because I flatter myself, that with the young and perfect subject I am about to subvert the present system of shoeing, and establish that which I have just recommended, by fettering with nails only one half of the foot, instead of incarcerating the entire organ, upon the free elasticity of which all the grace and splendour of this magnificent animal depend.

FOURTH PAPER;

VETERINARIAN, VOL. II, p. 363.

EXTRACTS EXPOSING THE INEFFICIENCY OF MR. BRACY CLARK'S TABLET EXPANSION SHOE.

MR. BRACY CLARK'S universal theme is the "mischievous effects of nails;" and yet this highly talented veterinarian *continues to use them*, and what is most extraordinary, towards the inside heel; but, by the aid of a joint at the fore part of the shoe, he states that they are rendered harmless, and do not oppose the natural expansion of the heels. That this doctrine is fallacious, the reader has only to refer to the ingenious remarks of Mr. Joseph Goodwin, in his very interesting work on the various modes of shoeing, practised by different nations; but this gentleman has left a chasm in his review which I shall attempt to fill, by pointing at one of the greatest errors of this high sounding Tablet Expansion Shoe when applied to practice, viz. the too close adaptation of the shoe to the hoof at the heels, occasioned by the nails approaching so near the heels, with the severe *clenching* requisite just at the weakest part of the foot, the *inside quarter*, in order that this *complicated* shoe may be retained in its situation.

Injurious pressure of the tablet expansion shoe upon the heels and quarters.

Now, Mr. Editor, if it be admitted, for argument sake, that the weight of the animal in quick motion is such as to overcome the restraint of these eight opposing points, and that in the *scuffle* (for I can give it no other name) between superincumbent weight, force, and resistance, the joint of the shoe does give a little, and concussion is moderated, let us consider the situation of the same hoof in the shoe, while the animal is in a quiescent state, tied up by the head in his stall twenty-two hours out of the twenty-four, and we shall find this jointed shoe of Mr. Bracy Clark's to be a *fetter* with a vengeance, under the disguise of *liberty*. The weight of a horse alone, unaccompanied with action, is quite unequal to the restraint of the nails, and consequently the joint at the toe of the shoe becomes a nullity, leaving the heels exposed to severe partial pressure, as with the common shoe. Contraction of the foot being principally engendered in the stable, this is the period of danger, although exertion afterwards out of the stable is the exciting cause of lameness; and thus it is that Mr. B. Clark's famous joint-shoe, after several year's trial, has *not* proved a "basis for the repose of the profession," as this gentleman so triumphantly expressed himself.

The joint at the toe of the shoe of no avail whilst the horse is standing in the stable.

When the owner of a valuable horse is congratulating himself on the *rest* he affords his pet in the stable, he little thinks that his mistaken kindness consigns his favourite to a canker-worm.

I next propose to explain my object in recommending the half nailing system. 1st, It affords the hoof all the protection contemplated by the shoe; 2dly, it permits all the natural functions of the foot to be duly performed, even in the greatest exertions of the animal; 3dly, which is of paramount importance, *it allows the foot to dilate in the stable,* by the weight of the horse alone, after the manner of an unshod foot; and therefore, Mr. Editor, I shall take upon myself to designate it *The New unfettered System of Shoeing.*

Side-nailing admits of the dilatation of the foot in the stable.

I do maintain, that no other method of shoeing whatever will admit of the natural alternate expansion and contraction of the horse's foot *during his many idle hours of confinement in the stable;* therefore, on calculating the few hours in a week that he is usually occupied in quick motion, it will be seen, that one of the principal advantages of the new method over the old, is the *unfettering of the foot whilst the animal is unemployed;* and during all which time the very reverse is the effect of Mr. Bracy Clark's miscalled expansion shoe, with the joint at the toe.

FIFTH PAPER;

Veterinarian, Vol. IV, p. 126.

THE ART OF HORSE-SHOEING SIMPLIFIED AND UNFETTERED; OR THE BENEFIT OF THE IRON DEFENCE WITHOUT THE BANE, BY AN IMPROVED METHOD OF NAILING.

[Read at the Veterinary Medical Society, Feb. 9, 1831.]

Gentlemen,

By the title of this paper you will perceive that I am about to refer to two former papers of mine, on Side-nailed Shoeing, published in the July and September numbers of The Veterinarian for 1829.

Having nothing to suggest on the method of shoeing now in common use in this metropolis, I shall not occupy your time by the details of a subject with which we are all so familiar, but propose forthwith to submit to your consideration a variety of advantages accruing from the new unfettered system of shoeing by *side-nailing:* but I fear you will accuse me of too much enthusiasm, on my venturing the prediction of two events; first, that it will very shortly be generally practised throughout these kingdoms; secondly, its beneficial effects will become so manifest, even to the most prejudiced eye, that it will be hailed as a new era in

A new era in veterinary history.

veterinary history, or as the epoch of the emancipation of the art of horse-shoeing from its most important objections.

Shortly after the publication in THE VETERINARIAN of my exposé on shoeing, I was assailed, in no very measured terms, by the relatives of Mr. Bracy Clark: to these zealous advocates of that author I instantly replied, as most of you are aware.

Having been called upon by them to avow from whom I derived the knowledge of the principle of elasticity or expansion of the foot of the horse, and secondly as to the injurious effects of the continued application of iron and nails, in impeding or restraining the natural expansion of the hoof, I answer, that on both these points I derived my information from the same source which enlightened Mr. Bracy Clark himself; viz. a work which is sufficiently adopted to have become the common property of us all,—I mean on the *Mechanism of the Horse's Foot, with its natural Spring explained, published by Strickland Freeman, Esq.* as long ago as 1796, several years previously to Mr. Bracy Clark's first publication on the foot. It was Mr. Freeman, not Mr. Bracy Clark, who first explained these great truths, so as to render them intelligible to others, as the following extracts amply testify. However, as the last September number of THE VETERINARIAN contains an impartial review, by its Editors, of the claims

Mr. Strickland Freeman, the first expounder of the true principle of elasticity or expansion of the foot.

of Mr. Bracy Clark to the discovery of the expansion of the horse's foot; I shall merely advert to one more passage in Mr. Freeman's work, which is unnoticed by the Editors of The Veterinarian, but important, in case Mr. Clark should attempt to argue that Mr. Freeman's views of the expansive principle was *limited*, like those of his predecessors, to the heels only, instead of the entire horny box participating in the expansion. A short sentence at page 3, and which I am astonished should have escaped the eyes of the Reviewers, sets this matter for ever at rest: "The hoof of the fore foot of the horse produces an elasticity *continued from the quarters to the point of the toe.*"

Now, with regard to the second question, the *nailed fetter*, I am more personally concerned; and on which the Editors of The Veterinarian have hitherto been silent. Mr. Freeman, at page 81, remarks on the absolute necessity there is of putting on plate shoes when an exact trial is required between race-horses; and thus acutely observes—

Mr. Freeman's observations on the *fettering* effect of the nails upon the hoof.

"For this, I think, there can be no other reason than the increase of spring which is gained by the *additional power of expansion given to his feet, by leaving the heels entirely unconfined.*" In the second leaf, this unpretending discoverer is content to disclose to us the grand secret quietly. These few plain words of his will suffice; viz. "Upon examining the race-horses' shoes, which had for-

merly been used, I found many of them very long, with nine or ten nails in them, and these pretty close together, and chiefly at the heels ; by which there was double the risk of laming the horses in shoeing, and *double the tendency to impede their going, by the heels being bound, so as to prevent their spring.*"

I am, however, open to confess, that I think Mr. Bracy Clark's writings, which relate to the anatomical structure and functions of the horse's foot, will amply repay the student for his time in reading them repeatedly; but with regard to this gentleman's views of the pathology of that organ, I am completely at issue with him.

The points of difference between us I shall endeavour to explain, at a future opportunity, in another paper, which will embrace the general diseases and accidents to which the horse's foot is liable.

Evils of the method of shoeing, as adopted at the present day.

I have now a few observations to offer in illustration of the baneful effects of iron and nails upon the elastic foot of the horse. In the discussion which followed my two papers on the Nature of the Navicular Joint Disease, its Causes, Symptoms, and Treatment, it will be remembered by many gentlemen present, that I proved to demonstration a pathological fact, which was doubted by most of the members then present; by some most strenuously denied, and ocular demonstration demanded: of course, this mandate was instantly obeyed; and

on unsheathing the weapons *several diseased, contracted feet appeared*, and in contrasting them with healthy, open feet, I satisfactorily proved to a numerous meeting of this Society, an unnatural position or *elevation of the coffin bone within the hoof*. Assured of the frequency of the occurrence of this altered position of the foot bone in feet which had been shod, and particularly with those horses in which the ordinary precautions for preserving the elasticity of the horn, through caprice or neglect, had been omitted, I am led from these data to the following deductions: 1st, That the common method of affixing the shoe by nailing to both sides of the hoof has an immediate tendency to destroy *the equilibrium or just balance of the weight when conveyed to the hoof.*

Instantaneous limitation of function of the elastic laminæ.

The five hundred elastic laminæ or plates which surround the coffin bone, in conjunction with a corresponding number of horny laminæ lining the crust, are known to be the sustainers of the superincumbent weight in the unshod natural foot, by forming a sort of dove-tailed union of immense strength. These numerous elastic springs elongate under the impression of the weight in direct ratio to the momentum or force, and which is accompanied with a corresponding relaxation or yielding of the horny box throughout at the same instant; by which concussion to the foot is obviated, and the animal himself preserved from jar.

On the other hand, we will suppose a three-

year old colt, and, to avoid extremes, instance the hackney size, three parts bred, with well-formed limbs, and sound hoofs of becoming size, neither too flat and low, nor too upright and strong, to be well shod in the ordinary way for the first time, and with a seated shoe of equal thickness toe and heels, secured by eight nails, four on each side or quarter, as usual. From the very first moment that this animal steps out of the forge upon the new surface interposed between his foot and the ground, his tread becomes uneven, although the foreign body which is appended to the foot is perfectly level. Now the elastic laminæ also sustain the weight in this fresh-shod colt, the impression of which has a tendency to elongate the laminæ to the same extent; but no, the fetter is upon the foot, and the best formed shoe that the art of man can devise, if nailed to both sides and quarters of the hoof, according to the mode in general use, will, from that very hour, *limit*, though it cannot altogether deprive the laminæ of their elongation. The laminæ covering the anterior and lateral portion of the coffin bone, will, on the instant, suffer some deprivation of function, just barely sufficient to disturb the harmony of the mechanism. The horny sole, however, notwithstanding the rigidity of the shoe and nails, will continue to descend in *part*, and will yield to the impression of weight and force united. It is this *partial* or *imperfect*

Partial or imperfect descent of sole.

descent of the coffin bone and horny sole to which I am anxious to draw your attention.

Freedom of expansion enjoyed by the unshod foot.

It is quite obvious that the unshod horse in a state of nature exercises equally the whole five hundred laminæ or elastic springs; by their elongation the coffin bone descends within the crust, under the impression of weight, from which pressure on the horny sole its arch sinks, and spreads uniformly in all directions, *toe as much as heel*, whilst every portion of the coffin bone which is in contact with the wall or crust also assists in dilating the base of the foot, and expanding the toe as well as the heels. The weight being removed, all these parts, by virtue of their own elasticity, instantly return to their former position, in readiness for renewed action; and undoubtedly the elasticity of the crust, the flexibility of the sole, frog, and bars, together with the expanded form of foot, are mainly preserved by this mechanical up-and-down motion, which, it should be remembered, with a horse left in his natural state is almost perpetual.

From the moment the colt is shod and nailed in the general way, on both sides, just so much of the coffin bone as is embraced by the portion of crust or wall which has received the nails, is limited in its descent, and a corresponding number of the elastic laminæ have their action also curtailed; but daily experience shews their office is not altogether

suspended, even by the most gross shoeing; but the iron and nails together prove the most rigid fetter, in proportion as each nail has its antagonist immediately opposite on the other quarter of the foot. The consequences of this innovation on nature are these: at no very distant period from the first shoeing, the sensible and horny laminæ become contracted; but as they remain entire in their organization, no pain ensues, the sole gradually becomes preternaturally arched, and the capacity of the horny box is by so much diminished; but yet this is not generally attended with pain, for nature as gradually adapts herself by her own resources to the change; the coffin bone actually grows to the altered shape of the hoof by absorption and deposit; and thus is the fetter repeated month after month; and perhaps years pass away before actual lameness is established, though in too many instances the reverse is the case.

Diminution of sensible and horny laminæ, in direct ratio to their impairment of function.

Consequent encroachment of the horny sole, its preternatural arch.

Capacity of the horny box diminished.

Every individual horse thus shod is exposed to one of the principal predisposing causes of lameness, by the tendency it has, in conjunction with other causes, *to elevate the coffin bone within the hoof*, from *limiting* the action of these highly elastic springs, and also favouring that protrusion of the frog within the foot, before described: the ravages which succeed to this state of the organ, should the navicular joint happen to be bruised in its sudden descent against these deformed and in-

Morbid ascent of the coffin bone, and corresponding adaptation of its shape by growth.

flexible parts below, I need not now dwell upon; but with respect to the navicular joint lameness, I beg to refer you to my papers on that most formidable and prevalent disease.

Hunting horses should, perhaps, be exceptions to this method of nailing, from their known liability to cast their shoes, even when nailed all round; and at my first view into this matter, I did think that horses with flat feet and low weak heels would also prove exceptions; but experience justifies me in stating, that there are many feet of this description much improved by the same plan, observing this slight difference, viz. the insertion of nine instead of eight nails, and the extra nail to be driven towards the inside quarter.

Gentlemen, notwithstanding the profound respect which I entertain for Mr. Coleman, viewing him as a teacher of the veterinary art, unequalled perhaps in Europe, I have occasion to differ in opinion with this high authority, respecting the descent of the sole. Mr. C. lays great stress, both in his Treatise on the Foot and in his Lectures, on the difference in the degree of descent of various parts of the sole, ascribing very great movement to that portion of sole towards the heal or seat of corn; whilst he contends there is little or no descent of sole towards the toe. Hence it appears, that Mr. Coleman's theory of the yielding of the coffin bone obliquely *backwards* and downwards, the descent

of the sole principally towards the heels, and expansion of the quarters instead of the entire organ, is so accommodating to the present pernicious mode of nailing or fettering the foot on both sides, that I fear the Royal Veterinary College will be the last to admit the new system of side-nailing.

My brother, Mr. Thomas Turner, of Croydon, has practised this unfettered plan of shoeing to a great extent; and much credit is due to him for the zeal and assiduity with which he has put it to the test; and I have his authority for stating, that the owners of the horses and persons concerned have given the method their unqualified approbation.

There is one drawback or alloy, and that the only one; but it is of an appalling kind, particularly in these hard times; viz. it will cut off our supply of best patients, by the *prevention* of lameness: our best consolation will be found in the superior usefulness of the animal.

I feel that as much might be urged in favour of a radical reform in the shoeing art as would usefully occupy the attention of the Society for half a session; but for the present I shall conclude my paper with a few remarks on the mechanical execution of the plan I have recommended. Now, it fortunately happens, that next in importance to the principle itself, is the simplicity of its practical application. I need not remind you, that all the inventive faculties of Mr. Bracy Clark and others have been taxed for a series of years, and have contributed ingenious

The simplicity of side-nail shoeing in its practical application a great recommendation.

contrivances, by which the shoe yields to the foot; most of them admirable in principle, but incompatible with practice. It is now quite obvious that their mistake, together with a prodigious sacrifice of valuable time, is owing to the complexity of their efforts in making the iron shoe to spread with the foot, which is altogether useless and uncalled for, as the foot can dilate with much less embarrassment by itself, the ordinary shoe being affixed, except with the omission of the nails in the inside quarter.

The form of shoe.

When I say the ordinary or common shoe, I mean that well-wrought piece of iron commonly applied in the principal forges in London and its vicinity, under the appellation of *the seated shoe*, of equal thickness toe and heel. The flat margin of the foot surface of this shoe, on which the crust rests, should be strictly level, particularly on the inside quarter, as any burr or edge would tend to impede the expansion of the hoof. Clips, judiciously placed, are important auxiliaries to this mode of nailing: in fact, they are indispensable; but two only are necessary to each shoe; the clip in front I prefer in the centre of the shoe, rather than the inside toe; the other on the outside quarter, immediately anterior to the heel nail. The number of nails not to be less than seven, nor to exceed nine, and to be thus disposed of; six in the outside quarter and toe of the foot, and two in the inside toe; no nail-hole to be punched immediately in the

Clips indispensable.

Number of nails.

centre of the toe of the shoe, thereby avoiding any inconvenience which might arise from the joint pressure of the clip and nail at this part; but the first nail-hole to be punched close to it, at the outside toe; and the remaining five as far distant from each other as possible, without the last nail approaching nearer the outside heel than is consistent with the safety of its insertion; the first nail in the inside toe to be punched full an inch from the outer edge of the clip.

Manner of introducing the nails.

In regard to *the paring of the soles* with this method of shoeing, I seldom deviate from the usual mode with those horses which have been shod several years; but with colts, and young horses recently brought into work, I am just now prosecuting some experiments, not yet concluded, but which have already afforded me good grounds for hoping that the shoeing art will admit of a still further simplification by the side-nailing.

Paring of the sole.

In the experiments in question with the colts' feet, I never suffer the hoofs to exceed *three weeks'* *growth* without removing the shoes, and moderately shortening the toes with the rasp, and slightly lowering the crust with the same instrument; but as to a drawing-knife, or knife of any description, their hoofs have not yet experienced either the use or abuse of any such instruments. One end of the rasp has been ground to a blunt chisel edge, with which a few flakes of sole have occasionally been

Experiments on colts' feet, in conjunction with side-nailing.

The use of the drawing knife superseded.

lifted off, and the colts, have, as yet, gone on well in work for several months. Their frogs have never yet suffered any diminution, except from natural detrition in meeting the ground, or other hard bodies. The importance of this improved system of shoeing in racing establishments, among the two-year-old candidates in particular, must, I conceive, prove of the first importance.

From attentively watching the feet of young horses which have never been shod by any method except the side nailing, I have had the satisfaction of observing one circumstance, which certainly I did flatter myself would result from it, which is, the *capability of the horny sole exfoliating of itself*, as in the unshod foot, thereby preserving its thinness and flexibility, instead of becoming morbidly thick and strong. This I conceive is attributable to the unrestrained motion of the sole, which the improved shoeing admits.

Spontaneous exfoliation of the horny sole.

Having suggested these hints with respect to the use of the drawing-knife being superseded in *colts'* feet, I shall conclude, gentlemen, by begging you to remember, that I do not pledge myself to shew that this instrument ought to be discarded; but I have hazarded thus much to induce the profession at large to extend the inquiry into this interesting subject.

SIXTH PAPER.

MORBID PHENOMENA CONNECTED WITH CHRONIC LAMENESS OF THE FEET OF HORSES, WHICH ARE NOT CONTAINED IN THE DETAILS OF ANY WRITER ON THE FOOT.

[Read at the Veterinary Medical Society, December, 1831.]

Gentlemen,

On the last occasion, when I tried to substantiate my opinion by the production of diseased specimens, and contrasted them with healthy ones, I only asked you to agree with me in the existence of a *morbid elevation of the navicular bone and heels of the coffin bone within the hoof*, as an accompaniment to navicular lameness; but the specimens I am now about to produce are so conclusive, so incontrovertible, that I would assert, no rational man will deny the presence of both these facts, with a third, of equal importance, in addition.

It is an old adage, "that, when the truth is at hand, all circumstances concur to establish it." Now, the concurring testimony that I have to offer (and which I think, when proved, must of necessity form a section of every future work on the diseases of the foot) consists in the *expulsion or displacement of the small pastern bone* from the

Elevated position of the small pastern bone.

Production of healthy and morbid specimens.

cavity of the hoof in chronic cases of navicular disease. [*The specimens, both healthy and diseased, were here submitted to the inspection of the Society.*]

It must be admitted, that the small pastern bone in the diseased specimen is occupying rather more the region of the leg than the area of the hoof, which is the place Nature allotted for about two thirds of its posterior division. The other disputed point, viz. the elevation of the navicular bone and heels of the coffin bone, must of necessity be conceded, provided I shew that the superior articulating surface of the coffin bone is in close approximation with the inferior articulating surface of the small pastern.

Morbid phenomena, confirmatory of the author's views regarding the false position of the contents of the hoof.

In this constriction of the hoof and its contents, it would appear that their relative situations are no longer preserved; that each constituent portion encroaches on another; and that not one essential division of this all-important member enjoys the freedom of space as designed by the Creator.

By reference to the diseased navicular specimens, it will be seen that, in proportion as the small pastern bone has suffered this protrusion or elevation it necessarily conveys the superincumbent weight almost exclusively to the coffin bone; whilst the upper articulating surface of the navicular bone, instead of being opposed to the inferior and posterior articulating surface of the small pastern, and catching the weight as a cup would a ball; this bone appears to be half turned in its elevation, and to

be placed *behind* the small pastern bone, rather than immediately under it.

In consequence of this false position of the navicular bone, it no longer receives its due share of the superincumbent weight when the animal is stationary or in slow motion ; but, what is much worse, it occasionally sustains a most severe shock by any sudden or violent movement of the animal; in which case, instead of the broad expanded surface of the navicular bone conveying the impression of the weight to the corresponding expanded portion of the flexor tendon, it will be seen that the weight can only be conveyed to the tendon by the anterior edge of the lower articulating surface of the bone ; and, to add to the embarrassment of the joint, it is obvious that this position of the bone causes a more acute angle of the tendon at this part than natural. Now this is the identical spot, viz. the lining membrane of the tendon at this part, which I have found to exhibit the first lesion upon the inspection of very recent cases of navicular lameness.

Displacement of all the bones of the foot.

Having proved to demonstration a very considerable displacement of all the three bones of the foot in these chronic lamenesses, and conceiving that these pathological facts are now placed beyond the pale of argument, it necessarily follows, that in our future treatment for the cure of navicular lameness these important features of the disease must not be disregarded. Whether the profession at

Reduction of the foot bones to their primitive stations, an important part of the treatment for navicular lameness hitherto omitted.

large will see or admit the expediency of attempting to reduce them to their primitive station, I shall not presume to prophecy; but, in taking a retrospective view of the subject, I feel much confidence in giving utterance to a conviction on my mind, that this has been one of our sins of omission, through which the proprietors of valuable horses have incurred a most oppressive tax for ages, by a fruitless expenditure of the national weal in keep and medicine, devoted to the attempts of curing such cases of contracted feet, without the surgeon ever having had the slightest glimpse into the hiding-place of his real opponent.

The avowed enemy, viz. the contraction of the horny box, we have all of us most successfully encountered, for nothing is more easy than to spread a narrow foot; but how true it is, that we have all been too much accustomed to be summoned to that same contest in the same foot again and again, in which we had erroneously taken to ourselves the credit of a cure. Why thus abortive? Because there has always existed in such cases a lurking enemy in ambush (as well as the declared one) with which we have never grappled.

With regard to a *primary cause* of this false position of the foot bones, to say nothing of a chief predisposing cause, I am of opinion that functional disturbance, for a very long period, precedes any organic disease; that this functional impairment

commences from the very first hour that the colt walks upon his first shoes; that the elastic laminæ by which the weight of the whole machine is suspended in the hoofs are put somewhat less upon the stretch than before the shoes were applied; yet, notwithstanding the restraint of iron and nails, the animal does not exhibit to his owner or persons about him the slightest indication of lameness or inconvenience; neither is he lame: but inconsiderable as the innovation is at the time, its continued repetition soon amounts to a bane, by causing, not disease, but simply a retraction of the laminæ in direct ratio to the partial suspension of their office; hence follows, in obedience to nature's law, diminished capacity, from the want of the naturally extensive action of the organ.

Organic disease preceded by long continued functional disturbance.

Now, the grand emancipation from this thraldom of the foot, the "clean sweeping reform," *consists in rivetting the iron defence to one side only of the hoof, instead of both, by the avoiding of which, neither quarter or side of the foot becomes fixed or fettered; but, by dilating under every impression of the superincumbent weight, the coffin and navicular bones are permitted to descend to the natural extent of the elastic apparatus in which they are embedded.*

Emancipation of the foot from the iron fetter.

Gentlemen, I will not further intrude on your time; but at another opportunity, with your permission, I have much to propose on the subject of

Cure, with the details of a plan which I hope to see hereafter recognized as legitimate treatment. Bnt I am sorry to be under the necessity of lengthening this paper for the purpose of giving utterance to the disappointment and chagrin which I feel at the worse than cold reception the new unfettered plan of shoeing has met with at the Royal Veterinary College. I repeat the words, worse than cold; because had the innovation in question on the old method of shoeing been boldly and flatly condemned as worse than useless by both the Professors, I should not have had any just cause for the complaint I am about to make, however severely I might have felt the disappointment at the time; but certainly nothing like a murmur would ever have escaped me; for I do not hesitate to avow, that I should be most thoroughly averse to yield on a professional point for courtesy sake, against my own judgment or opinion.

New unfettered plan of shoeing, as received at the Royal Veterinary College.

The case stands thus:—Many months ago I made a visit to the Veterinary College, when Mr. Coleman happened to be lecturing that morning upon the foot. I was thus induced to stay and hear him—at all times a perfect treat, in this instance more particularly—as the worthy Professor took in his hand one of my side-nail shoes, descanted upon it at considerable length, and in the presence of the most numerous class I ever saw in that theatre, extolled the merits of the system in the warmest terms,

without perceiving or expressing any practical objection to it; and finally gave it his most decided support and recommendation, as a most important improvement in the shoeing art.

The apparent success and sanction of the new system did not stop here; for Mr. Professor Sewell, without being aware of the high encomium it had just received in the lecture room, expressed himself so very spiritedly in its praise before the pupils, that I was quite astounded; and moreover requested that another model shoe might be forwarded to him, that he might have the pleasure of introducing it in his lectures: of course, I punctually complied with his request, and sent the shoe.

Model shoe forwarded to Mr. Professor Sewell by his particular request.

Now, the burden of my story is, that these eminent professors and distinguished leaders of our parent institution, "have not suited the action to the word." I am not so unreasonable as to complain that the one-sided-nailed shoeing is not generally practised at the College forge with working horses; but I do openly complain that it has not had even the *show* of a trial; and further, I am informed, both in writing and upon verbal authority of the most unquestionable character, that not even a solitary infirmary patient has been indulged with this really easy shoe.

My fear is, that so great is the reluctance to the admission of the unfettered shoeing within the College walls, that I have strong apprehensions that

Reluctance to the admission of unfettered shoeing within the College.

the College Professors will be deaf to their *professional* friends on this knotty point, and will actually procrastinate it till the day will arrive when their *non*-professional friends (clamorous from the accumulation of striking facts) will hold a more convincing argument on the subject of horse-shoeing than even the Professors themselves. A recent author has told us, that "For great truths there will always come a time and place."

CONCLUDING OBSERVATIONS.

It will be seen in the foregoing pages which relate to shoeing, that the reiterations of Mr. Bracy Clark respecting the baneful effects of nails upon the elastic hoof of the horse have, at last, been responded to in a way which, in some respects at least, cannot be otherwise than highly gratifying to the feelings of this persevering and acute observer. Although this intelligent and highly talented author has availed himself of every subtilty of expression in his recent publications on the foot of the horse, to stifle, conceal, and underrate the importance of *navicular disease,* whilst the works of other authors of the same date, and veterinary lectures, are found to teem with the subject, and have not willingly omitted the name of its promulgator, Mr. Bracy Clark has almost denied even the *existence* of such a disease, under a blind infatuation, that by his long continued labours he had made the subject of the foot of the horse solely his own, to the utter exclusion of all other veterinary aspirants. Notwithstanding, as a junior veterinarian, I would scorn to withhold the praise which I think due to this scientific veteran.

The importance of navicular disease much underrated by Mr. Bracy Clark.

It is undeniably true, that the evils which result from the resistance of the nails have been published repeatedly by numerous authors, and in a very pointed manner by an able writer only a few years before Mr. Bracy Clark's first publication on the foot appeared; but, nevertheless, there is great merit due to Mr. Clark, merely viewing this single point alone, for he has never ceased to declare the same doctrine in our ears ever since: and I believe I may add, that he has contributed much towards rousing us out of this veterinary lethargy which has been of about thirty-five years' duration, dating before Mr. Clark's time, by commencing with Mr. Strickland Freeman, who expressed the whole thing in the plainest possible terms in his splendid work on the Mechanism of the Horse's Foot, and its natural Spring explained, and published in the year 1796.

The author's opinion of Mr. Clark's works on the foot of the horse.

I do conscientiously repeat, that I think it would be well for every veterinary student, however much he may know or think he knows, to read most thoroughly and study Mr. Bracy Clark's works on the foot of the horse, so far as they relate to the anatomy, but more especially to the physiology, of that organ. I also equally feel it my duty, at the same time, to warn them against too hastily imbibing that author's views regarding the *pathology* of the foot; as I think time will soon shew that this prominent character has yet much to learn concerning

the foot of the horse, if we may take his last edition as a specimen of his pathological researches.

Having given Mr. Freeman credit for clearly shewing that iron and nails, by fettering the elastic foot, ultimately contract the horny box; and having extolled the praises of Mr. Bracy Clark for unceasingly reminding the veterinary world of the abstract fact for a long series of years; I shall now proceed, for the purpose of shewing that neither Mr. Freeman nor Mr. Clark, as their works will testify, had the most distant idea of the manner in which the iron fetter worked its baneful influence by causing a morbid elevation of all the bones of the foot.

For ages the foot of the horse has been known to be an highly elastic organ; and the two authors abovementioned, and others, have clearly shewn that the common shoe, by its inflexibility, fixes both the quarters of the foot; and, by opposing Nature in the exercise of the elastic apparatus, the hoof contracts, and ultimately the coffin bone diminishes in size, in consequence of pressure from the contracted horn. Now this view of the matter is partially correct; but there are some very important pathological facts, exclusively of the navicular joint disease, which they have altogether omitted to notice in their elaborate publications. The reader will perceive that I am referring to the morbid ascent of the bones of the foot, the particulars of which will be found in paper No. VI.

Important pathological facts never before published.

If it be true that this invasion or encroachment

of the bones upon the confines of each other within the hoof does exist in contracted feet generally, surely it is high time that those individuals who may be intent on the minute study of the horse's foot should be in possession of some guide or introduction to these morbid phenomena; for if I am rightly informed, no such doctrine has been inculcated by either of the professors in the course of their lectures at our parent establishment, the Royal Veterinary College of London.

The importance of a minute investigation by the profession on the subject of morbid elevation of the foot bones.

The subject demands the most minute and scientific investigation, as it is either an affair of no moment, although proved to exist, or the destiny of every individual horse (except of the cart kind) is involved in it from the first hour that the owner consigns him over to the shoeing forge*.

I cannot quit this discussion without again adverting to *Professor Coleman's Physiology of the Foot of the Horse.* His account in detail of the functions of this exquisite piece of mechanism is beautiful as far as it extends: it fascinates at once by its simplicity and its splendour combined; and it is,

* It affords me much gratification to observe that Mr. Blaine has just taken favourable notice, and recommends a trial of the side-nailing process of shoeing. This accomplished writer has just favoured the public with a fourth edition, much improved, of his "*Outlines of the Veterinary Art.*"

I have reason to know, that veterinary students have been in the habit of perusing this gentleman's works on the anatomy and physiology of the horse, and treatment of diseases generally, for a period of about thirty years, with incalculable benefit to themselves, and subsequently to their employers.

I believe, for the most part correct. The lustre which the talents, ingenuity, and zeal of this individual have spread over our infant science, by the dissemination of sound principles of the veterinary art throughout these kingdoms, far exceeds the power of my feeble pen to describe.

It is well known that Mr. Coleman has made the foot of the horse his particular study for a period of nearly forty years; and it is highly gratifying to me, as his pupil, that what I am about to advance (supposing my position a sound one) has no tendency to weaken any thing which he has established; but I hope to contribute in some degree to the superstructure, although this gentleman is deservedly eminent for his broad and comprehensive views in physiological investigation, and for having unfolded the various springs which comprise the elastic apparatus of the foot, together with their functions, which constitute the elasticity or expansibility of the organ; and although he ingeniously shews, or appears to shew, great provisions made by Nature both at the top as well as the base of the hoof to obviate concussion and contraction, he has, in my humble opinion, conceived only a limited and inadequate notion of the *expansive* power which a sound and fully developed foot really possesses. Mr. Coleman in his Treatise on the Foot, Vol. ii, page 89, observes, that "the heels of the coffin bone have a more extensive descent than the ante-

The descent of the toe or front of the coffin bone denied by Mr. Coleman as commensurate with its heels.

rior or centrical part of that bone." This position I materially differ from; and I have many reasons for contending, that, if the fact is not just the reverse, at least the descent of the anterior part of the coffin bone under the impression of the superincumbent weight, *even the toe of the bone*, is quite as extensive as the *very extremities of the heels of the bone*. A reference to the organic structure of the relative parts will be found completely to bear me out; viz. the elastic laminæ surrounding the coffin bone (by the elongation of which alone is the foot bone permitted to descend within the hoof) are more extensive, they are broader and more fully developed at the toe and anterior part of the bone than at the heels.

Author's opinion that the coffin bone descends equally at all parts in the unshod natural foot.

Now, as all who have written on this subject agree that the coffin bone and horny sole do yield or descend under the impression of the superincumbent weight, and thus prevent concussion of the whole animal, and of the foot in particular (a theory in which I fully concur), I am apprehensive that some of my readers may think I am attaching an importance to this difference of opinion relative to the *degree* of descent, anteriorly and posteriorly, which the subject does not deserve; and certainly, if our discussion were confined to the functions of the natural unshod foot, and the practice of shoeing horses' feet with iron and nails was for ever at an end, I might have paused before I mooted a subject

which might appear, at first view, merely splitting of hairs. But when I connect it with the general method of shoeing horses, by nailing both sides of the foot, I cannot divest myself of the idea, that this is one of Mr. Coleman's greatest *mistakes* in his writings and lectures on the foot of the horse; I mean *his denial of the descent of the toe or front of the coffin bone, as commensurate with the heels of that bone.*

The fact is briefly this,—that Mr. Coleman's own method of shoeing, or that of any other practitioner in town or country who secures the shoe to the foot by nailing both quarters or sides of the hoof, instantly curtails the whole elastic apparatus as regards its function; and the fettered organ under this deprivation exhibits a most curious representation of the *limited* expansion which the Professor has for so many years inculcated as being the *natural motion of an unshod perfect foot.*

Mr. Coleman, vol. i, page 27, also observes, "that when the laminated substances elongate, the horny sole at the *heels* descends." And at page 104, "that one of the uses of the horny sole is to act as a spring, by descending at the *heels*." It appears to me, that, in a good sound unfettered foot, it descends *equally* at the toe and sides as at its heels; and that it acts as a more important spring at the front and sides under the impression of weight and force, inasmuch as it describes a larger space,

The expansive principle taken on too limited a scale by Mr. Coleman.

and widens the base of the foot generally. But, according to Mr. Coleman's view, he only desires or expects the alternate expansion and contraction of the hoof posteriorly to the last heel nail in each quarter.

Mr. Strickland Freeman saw the elasticity of of this organ more accurately, and thus expresses himself at page 3 of his work:—"The hoof of the fore foot of the horse produces an elasticity continued from the quarters to the point of the toe."

By a succession of three bones, the large and small pastern and coffin bone, with their respective oblique articulations, the line of bearing is diverted from the perpendicular; and I am convinced that the coffin bone, under the impression of weight and action combined, is impacted into the hoof, and driven like a wedge to the uttermost extremity of the toe of the horny cavity; and that this bone, the fac-simile of the hoof in shape, is the grand wedge and *never-failing dilator of the hoof* at all parts; even admitting that the oblique direction of some of the fibres of the laminæ appear to favour the movement of the bone downwards and backwards. I am of opinion, with other practitioners, that the frog, when viewed comparatively as a mechanical dilator of the foot, performs but a very subordinate office*.

The coffin bone considered as a wedge and dilator of the hoof.

* Mr. Bracy Clark on the Foot of the Horse and Shoeing, part iii, last edition, page 85, observes most truly, "That it is not so much

Coffin bone, its perpetual motion the main preservative of the foot in a state of nature.

The horse is an animal designed by nature for active life. Observe him in pasture: he is seldom to be seen lying down, more seldom standing still, but almost invariably on the move seeking the best herbage. Be cautious never to attach any thing whatever to his hoofs by way of defence, *at any period of his life;* and never tie up his head for confinement; and he will have as good a foot at forty years of age as he had when a four-years-old-colt; mainly owing, I might almost say solely, to the unrestrained, constant, alternate extension and retraction of the elastic laminæ by which the foot bones are suspended in the hoof. Why do the bones never fail to preserve the natural foot expanded? Because the weight and movement of the horse keep his coffin and navicular bones in perpetual motion, and mechanically spread the wall of the foot in every direction.

Upon my first addressing the veterinary profession on the subject of side-nailed shoeing, I expressed my doubts as to the eligibility of that plan for *hunters*, owing to their known liability to cast their

from the upward pressure against the frog, as from the downward pressure of the limb and weight of the body upon the bones of the foot, that should produce this effect of expansion upon the yielding contents of the hoof: timely assisted, and in due time prevented, from too much depression in this direction, by meeting with the support of the frog, then brought to the ground at the time when the strain and weight is greatest; the sides of the foot then expanding laterally through their whole extent, and springing back again to their places on the removal of the exertion and weight."

shoes even when nailed *all round*. Subsequent experience, however, has convinced me that I was cautious to a fault: the method when judiciously followed, and the mechanical execution if accurate, has been crowned with complete success as to the security of the shoes. Of this I have had sufficient experience during the latter period of last hunting season, and throughout the present one. And I am proud to add, that this desirable end has been accomplished without the insertion of more than the ordinary number of nails (*viz. eight*) in any one instance.

Doubts of the Author removed as to the eligibility of side-nailed shoeing for hunters.

This naturally leads to an inquiry, how this apparently insecure nailing accomplishes the firm retention of the shoe to the foot. I acknowledge it to be insecure in appearance, inasmuch as one side of the foot is left unnailed. Now, it cannot be denied for one moment, that, had the horse's foot been a senseless inelastic block, the proper and most effectual way of securing the iron defence would have been the nailing all round the hoof, or to the very extremity of the iron; and doubtless the first man who was bold enough to drive nails into the foot of a living horse, with the view to its defence, contemplated only two things: first, that it was incumbent upon him to drive his nails with very great caution, that they might not penetrate the quick; and, secondly, so dispose them, as to their relative situations, as would best secure the

Apparently insecure.

iron defence to the foot amidst the exertions of the animal. Accordingly we find that he made each nail a rivet, and took especial care that each rivet should have an antagonist rivet on the opposite side; and had the foot, like the shoe, been an unyielding body, no better plan would have been in requisition at the present day.

To those who oppose side-nailing on the ground of insecurity, I am happy in being enabled, by the experience of the last year's close observation, to answer very briefly, though decidedly, that the *one-sided-nail-shoeing*, when executed by perfect workmanship and materials, is actually *more* secure than the common method of nailing,—I mean with reference to the liability of casting the shoe. For, independent of the *fact* of the shoes remaining on the feet to the end of a month's wear by the *side-nailed plan, it is quite a rare circumstance to see a clench started;* and I have frequently had the satisfaction of observing this smoothness of the clenches when the shoe has been worn all over to the thinness of a shilling.

The manner in which the firm retention of the shoe is accomplished.

Smoothness of the clenches after a month's wear.

A started clench a rare occurrence.

I think that neither the physiologist nor the mechanic will have any difficulty in reconciling his mind to this view of the matter, when we dispassionately reflect on the various struggles between the hoof, the clenches, and the shoe, which the common method of nailing on both sides necessarily imposes.

At every step of so bulky an animal as the horse, in quick movement (to say nothing of the additional weight of his rider), force being added to weight, the entire base of the foot has a tendency to dilate and increase in its diameter; but the shoe and nails together forbid the dilatation to a certain extent, limiting it to the posterior part of the foot only. Now, as in all other contests, we shall find here that "*the weakest go to the wall:*" the superincumbent weight, combined with force, is overwhelming; the rigid shoe denies the slightest possible accommodation, and the shanks of the nails only yield a little in a body with the crust into which they are driven; but this relief is accomplished at the expense, and, more or less, *displacement, of the clenches*, which frequently appear conspicuous after the horse has been shod in the common way about a fortnight, and begin to threaten the loss of the shoe.

Displacement of the clenches a necessary consequence of the common method of shoeing, explained.

Now the clenches in the *side-nailing* have this important advantage,—there is no distressing struggle, *clench versus clench*, no two being opposed to each other; but, all harmoniously acting in concert, they effectually defend the organ into which they are inserted, without at the same time imposing a *fetter;* so that these useful agents remain comparatively quiescent, subject only to the decay of fair wear and tear by attrition, realizing, in every sense of the word, the motto at the heading of this subject, viz. the *benefit* without the *bane*.

But I have still better proof to offer as to the security of the shoe, and which I cannot help expressing with exultation, having ascertained that the shoes of galloways, racing colts in training, and middle sized saddle horses, require *only seven nails* by this method, and are more secure upon the foot at the end of a month's wear than where the usual number are driven, viz. *eight*, and disposed of in the common way, four on each side of the foot.

Further experience has convinced me of another error, which my doubts led me into on the first contemplation of this subject: for *weak feet*, with low heels and flat soles, I imagined that nine nails would be necessary; but I have now satisfied myself, that in feet of this description the number should be neither *more* nor *less* than *eight* in each shoe on the one-sided principle, somewhat modified: the deviation is this,—that the nails round the toe should be so disposed of, as to bring the situation of the *eighth* nail *as far round* towards the inner half of the foot as the ninth nail would have occupied as before directed.

Thus the same principle of shoeing will be found beneficial in these cases, taking care to exercise it less extensively.

The side-nail system recommended for the cure and relief of corns.

For the relief of corns, the side-nailed system of shoeing, when carried to its full extent, is *perfect*.

When we reflect on the enviable rapidity with which we travel in England, in comparison with

other countries, owing to the excellence of our roads, and the forced condition of powerful blood horses, I would ask, When these foregoing facts become known and understood by the public, where is the post or coach-master, in any corner of these kingdoms, who might not turn them to a good account before the next day passed over his head?

Hint to post and coach proprietors.

To noblemen and gentlemen of the turf, *breeders of racing studs more especially,* whose tact for observation and acuteness in these matters are proverbial, I need not add another word by way of recommendation of the system, as I feel quite confident that its own intrinsic merit, without any farther effort on my part, will secure the adoption of the plan in racing establishments, although I am well aware it will first of all have to perform an Herculean task; that is, to render the prejudice of the stud-groom, for once, powerless.

The vast importance of side-nailed shoeing in racing establishments to the undeveloped and growing foot incalculable.

Upon the feet of our *cavalry horses* I flatter myself that this method of nailing, ere long, will be honoured with a fair trial: its several pretensions have been already noticed in these pages; but I hope my readers will excuse a repetition on one point, as applying particularly to regiments of cavalry. These horses being always kept up in condition, they necessarily spend the greater part of their time in the stable, unless engaged in actual service. I have endeavoured to prove that *contraction* of the foot of the horse, instead of being a dis-

The author's reasons for imagining that it will be honoured with a fair trial in the British cavalry.

ease arising from wear and tear, such as ordinary daily labour, is occasioned by *rest*. This disease is engendered by confinement in the stable for twenty-two hours out of every twenty-four, not from the simple circumstance of their standing so long upon clean straw beds, but from their being chained by the head to a post in the stall for weeks and months together: this stationary position operates mechanically upon the hoof, and is the greatest act of violence which we commonly offer to this organ. Therefore, calculating the few hours in a week that these horses are usually occupied in quick motion, it will be seen, that one of the principal advantages of the new method of shoeing over the old, is the *unfettering of the foot whilst the horse is unemployed*, and which is of paramount importance, as *it allows the foot to dilate in the stable*, by the influence of the animal's own weight, after the manner of an *unshod* foot.

Signal advantage of the new method over the old in unfettering the foot whilst the horse is unemployed.

APPENDIX.

HINTS TO BREEDERS AND PROPRIETORS OF YOUNG HORSES DESIGNED FOR THE TURF.

In the foregoing pages I have endeavoured to shew that the common method of *shoeing*, in conjunction with other causes, inevitably deprives the foot of the horse, in some degree, of its elasticity (to say nothing of lameness, which sooner or later supervenes), inducing a condition of the foot which approaches to disease, but yet so insidious in its nature as to defy the competent veterinarian to pronounce the animal lame.—*Vide* Paper II, p. 26.

Now, what I have hitherto advanced has relation to the *fore* feet, the consummation of the evil, viz. lameness, occurring *only* to the fore feet, as we well know by experience; but yet that the *hind* feet enjoy perfect immunity I do unhesitatingly deny. It is my present purpose boldly to assert, before the whole sporting world, that notwithstanding the prodigious combination of circumstances which may have ever conspired to enable the Derby colt to win his great race, and although the prize may have been borne off by one of Nature's master-pieces, urged by all the "cognoscenti" of Newmarket,

this deservedly proud favourite of fortune is but a sorry representative of the combined speed and strength to which the English racer might be made to attain. And, notwithstanding the concentration of horse knowledge always to be found among the *wary* members of the turf, and *money* afloat to bind the bargain and "make the mare to go," I have the audacity to repeat, that we have yet to see the English race-horse brought to the post in perfection—*that is*, capacitated for giving out his or her utmost speed.

The reader will anticipate that the evil I am about to decry is, the practice of shoeing the undeveloped and growing foot of this highly elastic and elegantly formed animal, by the common method of rivetting up both its sides at the tender age of one year.

The racing colt literally with a *vice* appended to each of his feet!! The racing colt in *clogs* would not be less fascinating to the ears of his trainer; but I can assure him, that the common method of shoeing, in the end, will prove an equal obstruction.

Every three-years-old colt, which has hitherto started for the Derby, has had his delicately organized feet *fettered* in those iron stocks for a period of about a year and a half previously. Can such a state of things continue? No; the side-nailed unfettered plan of shoeing, when exercised to the due

extent, will preserve the foot of the horse *unmutilated.*

The direct object of this Appendix is, respectfully to declare to the members of the turf, that I shall feel only partially satisfied by their adopting this new method of shoeing if practised upon the fore feet exclusively; and therefore I urge them to extend the benefit of the unfettered system to the *hind* feet also: I allude more particularly to growing colts.

In the course of these pages having descanted minutely on the *manner* in which the fore foot becomes deprived of its elasticity, and having shewn that it may sustain such a loss without a necessary accession of lameness, I think we may fairly conclude by analogy, that the *hind* foot, although exempt from the particular kind of lameness to which the fore foot is liable, may suffer some deprivation of its *elasticity* from the continued application of the fetter, although less in degree than the fore foot.

All must admit, that without elasticity there can be no speed. However inconsiderable the degree in which the elasticity of the hind foot may be impaired, if the elastic horny box shall have merely acquired any increased rigidity, without the slightest disturbance of its sensitive contents; or even if the full development of growth of this organ be in any part curtailed, then I maintain the race-horse

is not brought to the starting-post in the perfection of which he is capable.

In thus inviting the attention of the sporting world, *for the first time*, to the consideration of the *hind* foot, as to its efficiency for the purposes of the utmost speed, I beg to remind the reader, that I am only discussing the point with reference to its *elasticity*, lameness being wholly out of the question. If the existence of this defect of the hind foot be admitted, surely no one will have the temerity to contend that it is of no consequence to the race-horse, and that it offers no impediment to his speed or check to his stride.

Let it be remembered that, according to the laws of progression, the *hinder* limbs are the grand propelling agents. Trainers are well aware of this fact by experience, without ever having minutely traced cause and effect.

As all trained horses in this country have hitherto been *fettered* irrespectively, I mean to assert, that the most experienced man cannot yet determine the degree of velocity with which the ordinary English race-horse may be made to gallop by the aid of this reformation in the shoeing art.

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